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MONOGRAPH

OF THE GENUS

CHAMA.

"Here Nature multiplies
Her fertile growth."—*Milton.*

CONCHOLOGIA ICONICA:

OR,

ILLUSTRATIONS

OF THE

SHELLS OF MOLLUSCOUS ANIMALS.

VOL. IV.

CONTAINING MONOGRAPHS OF THE GENERA

CHAMA
CHITON
CHITONELLUS
FICULA
PYRULA
TURBINELLA
FASCIOLARIA
FUSUS
PALUDOMUS
TURBO

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BY

LOVELL AUGUSTUS REEVE, F.L.S., F.Z.S.

AUTHOR OF CONCHOLOGIA SYSTEMATICA, ELEMENTS OF CONCHOLOGY, &c.

"Look on the frame
Of this wyde universe, and therein read
The endless kind of creatures which by name
Thou can'st not count, much less their natures aime,
All which are made with wondrous wise respect,
And all with admirable beauty deckt."—*Spencer.*

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LONDON:
REEVE, BENHAM, AND REEVE, KING WILLIAM STREET, STRAND.
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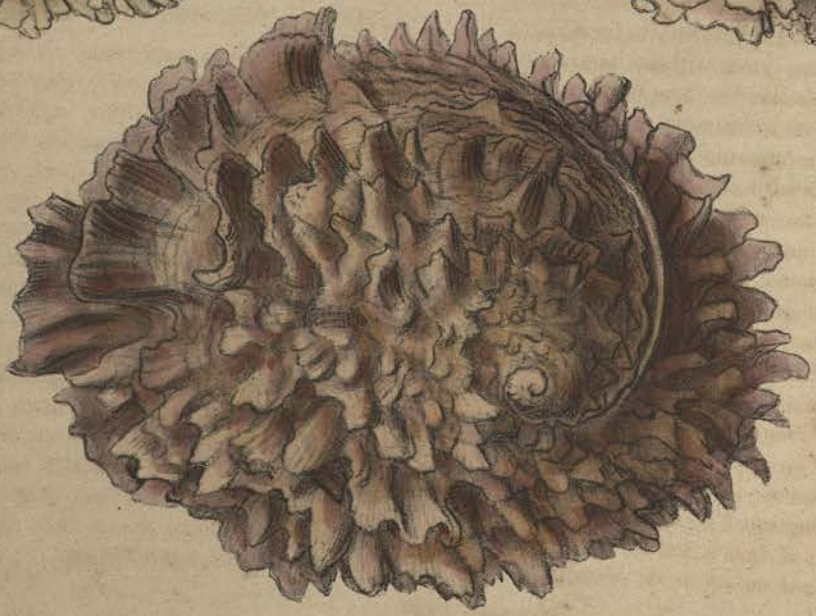

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Sowerby del et lith.

Reeve imp.

CHAMA.

PLATE I.

Genus *Chama*, Linnæus.

Testa orbicularis, vel oblongo-ovata, irregularis, inæquivalvis, spinis squamis lamellisve profusè ornatâ; valvâ inferiore plus minusve profundè concavâ, superiore planiore; umbonibus inæqualibus, distantibus, nunc dextrorsum, nunc sinistrorsum, in eadem specie involutis. Cardo dente unicô, crasso, obliquo, subcrenato, inserto. Impressiones musculares duæ, laterales, subamplæ. Ligamentum externum, post umbones divaricatum.

Shell orbicular, ovate or oblong-ovate, irregular, inequivalve, profusely ornamented with spines, scales or lamellæ; lower valve more or less deeply convex, upper valve flatter; umbones unequal, distant, involuted sometimes to the right, sometimes to the left in the same species. Hinge composed of a single thick oblique slightly crenated tooth, inserted in a correspondingly grooved pit in the opposite valve. Muscular impressions two, lateral, rather large. Ligament external, divaricate behind the umbones.

There is no genus of acephalous mollusks, excepting perhaps the Oysters, whose shells are liable to so much variation in form and general aspect, according to circumstances of habitation, as the *Chamæ*; it is easy to conceive that the growth of such parasitical genera would be more or less affected by irregularities in their place of attachment, but the *Chamæ* are more than usually distorted on account of their inhabiting the most confined situations, such as the crevices of rocks, and fissures of madrepore, without the power, possessed by most terebrating mollusks, of abrading or absorbing the obstacles to their natural advancement. The species are thus extremely difficult to define, and the difficulty much increases in consequence of the dissimilitude frequently presented in the same species under different circumstances of habitation; as for example between a specimen that has grown without interruption on a smooth surface, and one that has been formed within a very limited area, subject to external pressure; also between one that has had the opportunity of developing its luxuriant foliations undisturbed in calm and placid water, surrounded by food most favourable for the secretion of embellishment and colour, unaffected by exposure to light, and one which having to contend with the buffeting of the waves has become rude and stunted. Some species attach in groups one upon the other, others adhere by the anterior side only of the under valve, assuming the form of, as it were, a triangular cornucopia.

Notwithstanding these irregularities, the *Chamæ*, divested of the *Tridacnæ*, *Hippopi*, *Isocardiæ*, *Carditæ* &c., included with them by Linnæus, constitute a very natural and extended genus, distinguished by colouring and external sculpture in the form of spines, scales, lamellæ &c., scarcely inferior in beauty and variety to the *Spondyli*.

Lamarck divided the genus *Chama* into two sections, one including species with the umbones turned to the right, the other with them turned to the left; in which arrangement he has been followed by M. Rang; but it is clear from an examination of the magnificent series of from fifty to sixty species collected by Mr. Cuming, and which furnishes the whole of the material required for the present investigation, that this is merely a variation of growth common to the same species. Mr. Broderip has already noticed this fact in a memoir in the 'Transactions of the Zoological Society' vol. 1. p. 301. containing descriptions of a few of the most striking species of Mr. Cuming's collection, and it only remains to refer the reader for an illustration of it to Plate III. of the present monograph, in which I have represented two individuals of the same species, one at f. 10 *a*, with the umbones turning from left to right, the other f. 10 *b*, with these processes directed from right to left. This is undoubtedly a feature of very rare occurrence, but it is nevertheless a condition of growth precisely analogous to what has been observed in the *Lucina Childreni*, and is so common, amongst univalves, in the *Bulimus citrinus* and others; the great majority of species are still, however, so far as we know at present, some constantly dextral, others constantly sinistral, as in the genus *Arca*.

Like all species of vivid colouring and luxuriant growth, the *Chamæ* are chiefly inhabitants of the tropical seas: they abound principally on the coast of Central America, Peru, Mexico, Honduras and the West Indies, some are found among the Pacific Islands, others in Australia, China, and the Philippine Islands, and their northern limit is in the Mediterranean.

Species 1. (Fig. *a* and *b*, Mus. Cuming.)

CHAMA FRONDOSA. *Cham. testâ ovatâ, vel subquadrato-ovatâ, anticè plus minusve lobatâ, creberrimè irregulariter lamellosâ, lamellis subtiliter radiatim plicatis, sinuosis, in seriebus duabus, unâ posticâ, unâ medianâ, ab umbone radiantibus, multo majoribus, pulcherrimè frondosis; intus valvarum marginibus minutissimè crenulatis et corrugato-striatis; croceâ, purpureo hic illic tinctâ, intus cæruleo-albidâ, prope margines purpureâ.*

THE FRONDOSE CHAMA. Shell ovate, or somewhat squarely ovate, more or less lobed, very closely irregularly lamellose, lamellæ finely radiately plaited, sinuous, in two rows, one posterior, the other medial, radiating from the umbone, the lamellæ are much larger and very beautifully frondose; interiorly the edges of the valves are very minutely crenulated and wrinkled with striæ; bright saffron yellow, stained here and there with purple, interior blueish white, stained with rich crimson purple towards the edge.

Variety β. (Fig. 1 *b*.)

Testa lamellis brevioribus, minus frondosis, numerosioribus, irregularibus sed magis æqualibus; omnino purpurea.

Shell with the lamellæ shorter, less frondose, more numerous, irregular but more equally distributed; purple.

BRODERIP, Trans. Zool. Soc., vol. i. p. 302. pl. 38. f. 1 and 2.

Hab. Var. *a*, Island of La Plata, West Columbia (dredged up from a rock of coral to which it was adhering at a depth of seventeen fathoms); var. β, Gulf of Tehuantepec, Mexico (dredged up from sandy mud attached to large *Aviculæ*); Cuming.

It is impossible to do justice in a figure to this magnificent species; the bold and elegant structure of the frondose laminæ, towering one over the other, coupled with their vivid colouring, render it eminently beautiful. Each lamella in the middle and posterior rows of Var. *a*, is formed like a broad expanded fan-shaped leaf, radiately plaited on the upper surface, and of a rich saffron colour, slightly tinged with purple; whilst the hollow surface beneath is smooth and peculiarly tinted, the ground colour being of a purer and brighter yellow, shaded at the base with a rich crimson purple, rising, as it were, out of the root. The Var. β is of an uniform purple-lake colour, still exhibiting sufficient indications of yellow in places to show its affinity in this respect; the lamellæ, though broken and irregular, are nevertheless characterized by the plaited structure on the outer side.

It is unnecessary to refer to the sculpture of the under valve in this genus, unless it presents, as in the *Spondyli*, a difference of structure; that is by no means unfrequently the case, but in the species under consideration the character of the attached valve is the same, allowing for irregularities occasioned by circumstances of habitation.

Species 2. (Mus. Cuming.)

CHAMA BRODERIPII. *Cham. testâ oblongo-ovatâ, subtrigonâ, valvâ superiore squamis fornicatis oblongis subangustis, valdè irregularibus, inferiore lamellis imbricatis, subplicatis creberrimè ornatâ, valvis ambabus umbones versus radiatim striatis, intus valvarum marginibus minutissimè crenulatis; valvâ superiore purpureo-rubrâ squamis albidis, inferiore squamis aurantio-rubris, intus albidâ, margines versus purpureâ.*.

BRODERIP'S CHAMA. Shell oblong-ovate, somewhat triangular, upper valve very closely ornamented with very irregular narrow oblong vaulted spines, the lower with slightly plicated imbricated lamellæ, both valves radiately striated towards the umbones; margins of the valves within very minutely crenulated; upper valve purple-red, scales whitish, lower with the scales uniform orange-red, interior white, margins purple. *Chama Pacifica var.*, Broderip.

Hab. Lord Hood's Island, Pacific Ocean (found attached to large *Aviculæ* at the depth of six fathoms); Cuming.

I dedicate this species to the author of the admirable, though limited, paper on *Chama* in the Trans. Zool. Soc., who, I think, has erred in including this under the head of *C. Pacifica*; there appears to be an uniformity of character in this variety distinct from that species, which is of a more oblong crescent shape, with the spines fewer and more erect, and of a peculiar livid purple colour.

Species 3. (Pl. I. Fig. 3, and Pl. VI. Fig. 3 *b*.)

CHAMA IMBRICATA. *Cham. testâ hemisphæricè ovatâ, circuiter trigonâ, valvâ superiore lamellis foliaceis imbricatis, confertissimis, plano-declivibus, marginem versus ornatâ, umbonem versus muticâ aut subtiliter obliquè liratâ, posticè squamarum minutarum seriebus transversis exculptâ; valvâ inferiore liris rudis undatis, obliquè dispositis, ad extremitatem superiorem squamatis, ornatâ; valvarum marginibus internis obsoletè minutissimè crenulatis; albâ, squamis lamellisque undique albis, interstitiis inter series squamarum lirasque sanguineo-purpureis, intus albâ, marginibus purpureâ.*

THE IMBRICATED CHAMA. Shell hemispherically ovate, circuitously triangular, upper valve ornamented towards the margin with imbricated foliaceous lamellæ, very close-set and slanting forward one over the other, towards the umbone smooth or finely obliquely ridged, posteriorly engraved with transverse rows of minute scales; lower valve ornamented with rude undulating ridges, arranged obliquely and scaled at the upper extremity, internal ridges of the valves obsoletely very minutely crenulated; white, scales and lamellæ ivory white throughout, interstices between the ridges and rows of scales deep blood-red purple, interior white, faintly stained with purple at the margins.

BRODERIP, Trans. Zool. Soc. vol. 1. p. 304. pl. 39. f. 2.

Hab. Lord Hood's Islands, Pacific Ocean (found attached to large *Aviculæ* at depths ranging from three to seven fathoms); Cuming.

Mr. Broderip includes a far wider range of varieties under this head than I can admit; the shell figured by him at Pl. 32. f. 3. of the Trans. Zool. Soc. is in my opinion considerably removed from it. I incline rather to think, on the contrary, after the most patient investigation, that the present species is one in which the characters above described are more than usually permanent.

For the sake of avoiding the imputation of having a desire to multiply species unnecessarily, I have represented at Plate VI. Fig. 3 *b*. a specimen of *Chama imbricata* in a very immature state, from quite another locality (Mauritius) found under very different circumstances (attached to a rough piece of madrepore), and yet possesing all the characteristics detailed above, both in regard to colour and arrangement of sculpture; namely, the rude oblique ridges of the lower valve, and the snowy white imbricated lamellæ, with the transverse rows of minute white scales, deep purple in the interstices, on the posterior side of the upper.

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Sowerby, del. et lith.

Reeve, imp.

CHAMA.

PLATE II.

Species 4. (Fig. *a* and *b*, Mus. Cuming.

CHAMA LAZARU. *Cham. testâ orbiculari, planiusculâ, valvis ambabus pulcherrimè lamellatis, lamellis conspicuè foliaceis et frondosis, supra et infra striatis, valvarum marginibus internè lævibus; niveâ, roseo-purpureo interdum ab umbonibus tinctâ et radiatâ.*

THE FOLIATED CHAMA. Shell orbicular, rather flattened, both valves very beautifully lamellated, lamellæ conspicuously foliaceous and frondose, striated above and beneath, margins of the valves smooth internally; snowy white, sometimes stained and rayed from the umbones with pink purple.

LINNÆUS, Syst. Nat. (12th. edit.), p. 1139.
Chama damæcornis, Lamarck.

Hab. Mauritius, Philippine Islands, &c.

M. Deshayes has fully explained that Lamarck's *C. damæcornis* is the true *C. lazarus* of Linnæus, according to the references given in the 'Systema Naturæ', and I have had the pleasure of verifying his statement by the original specimen in the collection of the Linnæan Society.

Species 5. (Mus. Cuming.)

CHAMA SENEGALENSIS. *Cham. testâ suborbiculari, posticè sublobatâ, valvâ superiore minutè radiatim squamatâ, posticè lamellarum seriebus duabus ornatâ, inferiore squamatâ, squamis oblongis, irregularibus, adpressis, valvarum marginibus fortiter crenatis; albidâ, rubro-fusco uniradiatâ, squamis lamellisque roseis, intus albâ.*

THE SENEGAL CHAMA. Shell somewhat orbicular, somewhat lobed posteriorly, upper valve minutely radiately scaled, ornamented on the posterior side with two rows of lamellæ, lower valve squamate, scales oblong, irregular, pressed down, margins of the valves strongly crenated; whitish, with a single ray of reddish brown, scales and lamellæ pink; interior white.

Hab. Senegal.

The umbones of this shell are very much produced, that of the attached valve being erected into a horn after the manner of the *C. cornuta* of Chemnitz, (*C. unicornis*, Lamarck), but I cannot identify it with the figure of the Conchylien Cabinet in respect of sculpture, and the peculiarity of growth above noted is certainly, as M. Deshayes states, the force of accident.

Species 6. (Mus. Cuming.)

CHAMA MACROPHYLLA. *Cham. testâ ovatâ, valvis ambabus undique lamellatis, lamellis imbricatis, grandis, irregularibus, striatis, valvarum marginibus minutissimè crenulatis; roseâ aut vividè luteâ, intus albicante.*

THE LARGE-LEAVED CHAMA. Shell ovate, both valves lamellated throughout, lamellæ imbricated, large, irregular, striated, margins of the valves very minutely crenulated; pink or bright yellow, interior whitish.

CHEMNITZ, Conch. Cab. vol. vii. p. 149. pl. 52. f. 514, 515.
Chama lazarus, Lamarck (not of Linnæus).

Hab. West Indies.

This prettily coloured and well-known species from the West Indies, was erroneously taken by Lamarck for the ancient *C. lazarus* of Linnæus.

Species 7. (Mus. Cuming.)

CHAMA IOSTOMA. *Cham. testâ suborbiculari, valvis ambabus laminis continuis adpressis concentricè ornatis, posticè liris perpaucis brevibus transversis, valvarum marginibus lævibus; albidâ, circa umbones purpureâ, intus albâ, margines versus undique vividè violaceo-purpureâ.*

THE VIOLET-MOUTH CHAMA. Shell somewhat orbicular, both valves concentrically ornamented with continuous pressed down laminæ, with a few short transverse ridges on the posterior side, margins of the valves smooth; whitish, purple about the umbones, interior white, coloured with deep purple towards the margins throughout.

CONRAD, Journ. Acad. Nat. Sci. Philadelphia.
Chama producta, Broderip.

Hab. Sandwich Islands.

Distinguished by its concentric laminæ, which look like a row of fine plaited frills, and by the rich purple colouring of the interior towards the margins.

The *C. producta* of Broderip, (Pl. III. Fig. 13,) is an enormously produced example of this species.

Species 8. (Mus. Cuming.)

CHAMA FOLIACEA. *Cham. testâ ovatâ, trigonâ, valvis ambabus divaricatim striatis, striis subundulatis rugosis,*

posticè squamarum seriebus ab umbonibus undato-radiantibus, anticè subsquamatis, valvarum marginibus intus minutissimè crenulatis; rufâ, squamarum seriebus posticis albis, intus albâ, posticè purpureâ.

The foliaceous Chama. Shell ovate, triangular, both valves divaricately striated, striæ slightly waved, rough, with rows of scales radiating in a waved manner from the umbones on the posterior side, and a few erect scales on the anterior, margins of the valves very minutely crenulated within; red, posterior rows of scales white, interior white, purple posteriorly.

Quoy and Gaimard, Voyage de l'Astrol. Zool.

Hab. Island of Burias, Philippines (under stones); Cuming.

The white radiating rows of scales have a very prominent aspect on the dark red ground of this shell.

Species 9. (Mus. Cuming.)

Chama corrugata. *Cham. testâ oblongo-ovatâ, circuiter trigonâ, valvâ superiore rugoso-squamatâ, squamis parvis angustis, irregularibus, adpressis, inferiore transversim vel obliquè corrugatâ, valvarum marginibus lævibus; valvâ superiore purpureo-rufâ, albivariegatâ, inferiore albâ purpureo-rufo obliquè lineatâ; intus vividè purpureâ, ad margines lutescente.*

The wrinkled Chama. Shell oblong-ovate, circuitously three-sided, upper valve roughly squamate, scales small, narrow, irregular and pressed down, lower valve transversely or obliquely wrinkled, margins of the valves smooth; upper valve purple-red, variegated with white, lower white, obliquely lineated with purple-red, interior very dark purple, yellowish at the margins.

Broderip, Trans. Zool. Soc. vol 1. p. 305. pl. 31. f. 7.

Hab. Real Llejos, Central America (under stones); Cuming.

Another species of remarkably flattened circuitous growth of which finer and more characteristic specimens have come to hand since it was described and figured by Mr. Broderip.

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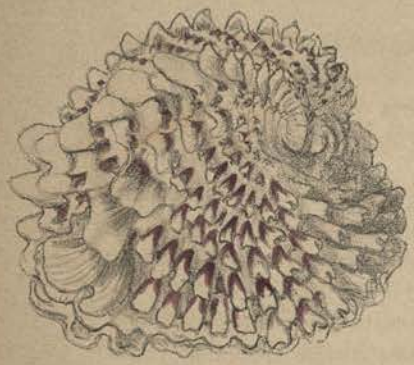

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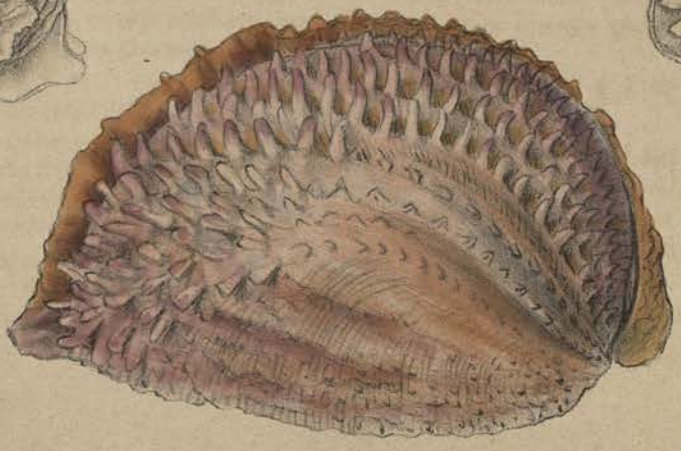

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e Sowerby del. et lith.

Reeve, imp.

CHAMA.

PLATE III.

Species 10. (Fig. *a* and *b* Mus. Cuming.)

CHAMA PULCHELLA. *Cham. testâ suborbiculari, trigonâ, lateraliter affixâ, valvâ superiore, concentricè pulcherrimè laminatâ, laminis striatis et serratis, posticè ampliter foliaceis, inferiore lævigatâ et irregulariter foliaceâ, foliis grandibus, valvarum marginibus lævibus; niveâ, ferrugineo-fusco radiatâ.*

THE PRETTY CHAMA. Shell somewhat orbicular, three-sided, affixed by the side, upper valve concentrically very beautifully laminated, laminæ striated and serrated, posteriorly largely foliated, lower valve smooth and irregularly foliated, foliations large, margins of the valves smooth; snowy white, rayed with rust-brown.

Hab. Cape Upstart, New Holland (on coral reefs at low water); Jukes.

In the examples of this beautiful species figured in the accompanying plate, it may be observed that the umbones are turned in one from left to right, and in the other from right to left.

Species 11. (Mus. Cuming.)

CHAMA SINUOSA. *Cham. testâ suborbiculari, posticè sinuatâ, valvis ambabus concentricè laminatis, laminis in squamis tenuibus fornicatis eleganter productis, squamis posticè ampliter foliaceis et striatis, valvarum marginibus lævigatis; intus extusque niveâ, squamis basi pulcherrimè purpureo-roseis.*

THE SINUOSE CHAMA. Shell somewhat orbicular, sinuated posteriorly, both valves concentrically laminated, laminæ elegantly produced into thin vaulted scales; the posterior of which are largely foliated and striated, margins of the valves smooth; white within and without, scales very beautifully coloured round the base with purple rose.

BRODERIP, Trans. Zool. Soc. vol. 1. p. 303. pl. 39. f. 11.

Hab. Brazil; Miller.

One of the most delicate and beautiful species of the genus; the shell is pure white, whilst the laminæ of vaulted scales are coloured round the base in a very peculiar manner with rose-purple.

Species 12. (Mus. Cuming.)

CHAMA MULTISQUAMOSA. *Cham. testâ ovatâ, planiusculâ, valvis undique creberrimè fortiter et irregulariter squamatis, squamis valvæ superioris suberectis, inferioris plano-adpressis, valvarum marginibus internis subtilissimè crenulatis; albidâ, roseo-tinctâ, squamis niveis, intus albâ, roseo-tinctâ.*

THE MANY-SCALED CHAMA. Shell ovate, rather flattened, valves very closely strongly and irregularly scaled throughout, scales of the upper valve rather erect, of the lower flatly pressed down, internal margins of the valves very finely crenulated; whitish, tinged with rose, scales snowy white, interior white, tinged with rose.

Hab. Matnog, Island of Luzon, Philippines (attached to coral); Cuming.

The shell here figured offers another instance in which the lower umbone is erected into a horn, after the manner represented by Chemnitz in his *C. cornuta*, (*C. unicornis*, Bruguière); it does not however agree in sculpture with that species.

Fig. 13. represents the *Chama producta* of Broderip in Trans. Zool. Soc. vol. 1. p. 305. pl. 39. fig. 4. which I have perfectly identified as an enormously produced specimen of the *Chama iostoma* of Conrad, figured in the preceding plate. For Species 13 see Plate VI.

Species 14. (Mus. Cuming.)

CHAMA SULPHUREA. *Cham. testâ subtrigono-ovatâ, planiusculâ, valvâ superiore undique squamatâ, squamis numerosis, irregularibus, brevibus, appressis, prope marginem longioribus et magis erectis, inferiore obliquè liratis, liris latiusculis, ad marginem squamatis, valvarum marginibus internis minutissimè crenulatis; pallidè luteâ, purpureo ab umbonibus subindistinctè radiatâ.*

THE SULPHUR CHAMA. Shell somewhat triangularly ovate, rather flattened, upper valve squamate throughout, scales numerous, irregular, short, pressed down, near the margin longer and more erect, lower valve obliquely ridged, ridges rather broad, squamate at the margin; internal margins of the valves very minutely crenulated; pale yellow, somewhat indistinctly rayed from the umbones with purple.

Hab. Calapan, Island of Mindoro, Philippines (attached to stones); Cuming.

A delicate sulphur-coloured shell, very irregularly scaled but extremely characteristic in its appearance.

Species 15. (Mus. Cuming.)

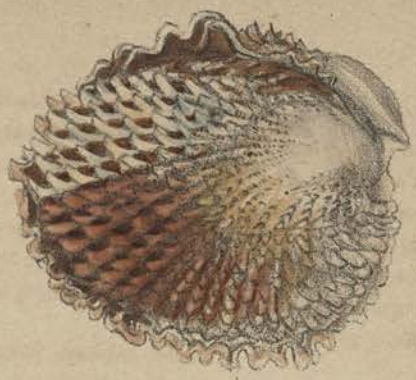
Chama Pacifica. *Cham. testâ oblongo-ovatâ, circuiter trigonâ, valvâ superiore divaricatim striatâ, posticè squamatâ, squamis subdistantibus, fornicatis, erectis, inferiore obliquè liratâ et squamatâ, valvarum marginibus internis minutè crenulatis; purpureo-laccâ, aurantio tinctâ, squamis pallidè livido-laccis.*

The pacific Chama. Shell oblong-ovate, circuitously triangular, upper valve divaricately striate, posteriorly squamate, scales somewhat distant, erect, lower valve obliquely ridged and scaled, internal margins of the valves minutely crenulated; purple-lake stained with orange, scales pale livid lake.

Broderip, Trans. Zool. Soc. vol. 1. p. 303. pl. 39. f. 1.

Hab. Lord Hood's Island, Pacific Ocean (obtained by diving for the large *Aviculæ* to which it attaches); Cuming.

This magnificent species is very peculiar in its colouring, being of a livid purple lake, besmeared as it were with a dark gamboge orange, but which latter colour does not appear on the scales.



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Sowerby del. et lith.

Reeve imp.

CHAMA.

PLATE IV.

Species 16. (Mus. Cuming.)

CHAMA REFLEXA. *Cham. testâ orbiculari, planiusculâ, valvæ inferiori margine reflexâ, valvâ superiore squamis brevibus fornicatis concentricè seriatim dispositis, inferiore lamellis irregularibus imbricatis ornatâ; valvarum marginibus internis minutissimè crenulatis; rubido-purpureâ umbones versus albâ, squamis posticis tantum valvæ superioris albis aut pallidè stramineis; intus albâ, posticè vividè purpureâ.*

THE REFLECTED CHAMA. Shell orbicular, rather flat, margin of the lower valve reflected, upper valve ornamented with concentric rows of short vaulted scales, the lower with irregular imbricated lamellæ, internal margins of the valves very minutely crenulated; reddish purple, white towards the umbones, posterior scales only of the upper valve white or straw-coloured, interior white, rich purple posteriorly.

Hab. Darnley Island, North Australia; Jukes.

The lower valve of this species is probably reflected on the anterior side from its having been attached in some confined situation; but I notice the character because it is also slightly reflected posteriorly, where there appears to have been no pressure to intercept the growth.

Species 17. (Mus. Cuming.)

CHAMA NIVALIS. *Cham. testâ ovato-oblongâ, valdè tumidâ et globosâ, valvis ambabus subobsoletè radiatim corrugato-plicatis, ad margines hic illic rudè squamatis aut lamellatis; albâ, purpureo-fusco concentricè tinctâ.*

THE SNOW-BALL CHAMA. Shell ovately oblong, very much swollen and gibbous, both valves rather obsoletely radiately plicated in a wrinkled manner, rudely scaled or lamellated here and there at the margins; white, concentrically stained with purple brown.

Hab. North Australia; Jukes.

Of a peculiar subquadrate oblong form, sculptured with almost obsolete stunted plaits or immature scales which in the upper valve are to a considerable extent abraded in the specimen before me.

Species 18. (Mus. Cuming.)

CHAMA CORALLOIDES. *Cham. testâ crassiusculâ, circuiter trigonâ, sublobatâ, minutè rugoso-liratâ, posticè minutissimè rugoso-striatâ; albidâ, liris striisque purpureis, intus purpureâ, cardine vividè corallo-rubro.*

THE RED-CORAL CHAMA. Shell rather thick, circuitously triangular, somewhat lobed, minutely roughly ridged, very minutely roughly striated on the posterior side; whitish, ridges and striæ purple, hinge bright coral-red.

Chama echinata (ætate provectâ), Broderip, Trans. Zool. Soc. pl. 39. f. 6 and 7.

Hab. Porto Portrero, Central America (found attached to rocks at low water); Cuming.

I cannot trace the affinity which Mr. Broderip assumes for this species with *C. echinata*; it is true there is a strong indication of the deep coral-red colouring in the interior of that species, and it inhabits the same locality, but not only does it differ materially in form, but it is characterized by a different system of sculpture. No modifying force would, I conceive, bring the purple brown spines of the *C. echinata* into the two-fold arrangement of undulating ridges and striæ which characterize the species under consideration. The interior is most richly coloured, being of an intensely dark purple, whilst the hinge-tooth is of a deep coral-red; for illustration of this, I refer the reader to Mr. Broderip's figures in the Trans. Zool. Soc.

Species 19. (Mus. Cuming.)

CHAMA RADIANS. *Cham. testâ semi-globosâ, lateraliter affixâ, valvis ambabus laminis tenuibus brevissimis numerosissimis plano-appressis, trigono-concentricis, compositis; albidâ, ferrugineo-fusco posticè radiatim tinctâ.*

THE RADIATING CHAMA. Shell semi-globose, affixed by the side, both valves composed of very numerous, thin, very short laminæ, triangularly concentric and flatly pressed one upon the other; whitish, radiately stained on the posterior side with rusty brown.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. vi. p. 515.

Hab. ——?

To judge from the figures hitherto published of this species it appears to become attached in pairs; the specimen before me, as well as those represented in the Encyclopédie Méthodique, and by Chemnitz, being severally distinguished for this mode of attachment.

Species 20. (Mus. Cuming.)

CHAMA DIVARICATA. *Cham. testâ orbiculari, subobliquâ, prope umbones subtilissimè divaricatim corrugato-striatâ, deinde rugosâ, squamis longiusculis fornicatis, spinæformibus, erectis, profusè armatâ; valvarum marginibus internè crenulatis; vividè rufâ et purpureo-rufâ, squamis eburneis, intus albâ, margines versus purpureo-rufâ.*

THE DIVARICATE CHAMA. Shell orbicular, somewhat oblique, very finely divaricately wrinkled with striæ near the umbones, then rough and profusely armed with rather long spine-shaped erect vaulted scales; margins of the valves crenulated internally; bright red and purple, scales ivory white, interior white, purple-red towards the margins.

Hab. Catbalonga, Island of Samar, Philippines (attached to masses of coral); Cuming.

This beautiful species may be recognized by the wrinkled striæ near the umbones; I cannot think that it is the result of accident, being developed on that portion of the shell on which the sculpture deposited in an early stage of growth is most likely to be permanent. The spines which beard, as it were, the remainder of the valve are remarkably prominent and distinguished for their absence of colour.

Species 21. (Mus. Cuming.)

CHAMA FERRUGINEA. *Cham. testâ orbiculari, subobliquâ, subrugosâ, concentricè tenuilamellatâ, lamellis appressis perpaucis anticis erecto-foliaceis, seriebus duabus posticis ampliter foliaceis subappressis; valvarum marginibus lævibus; albidâ, ferrugineo-fusco hic illic pallidè tinctâ, lamellarum seriebus duabus posticis saturatiorè ferrugineo-fuscis.*

THE RUSTY CHAMA. Shell orbicular, somewhat oblique, concentrically finely lamellated, lamellæ pressed down one upon the other, a few lamellæ on the anterior side erectly foliaceous, two rows of lamellæ on the posterior side largely foliaceous and a little appressed; margins of the valves smooth; whitish, palely stained here and there with rust-brown, the two posterior rows of lamellæ darker rust-brown.

Hab. Bay of Honduras (attached to shells); Dyson.

An interesting new species recently collected by Mr. Dyson, which may be readily distinguished by the arrangement of its fine foliaceous lamellæ and their peculiar rust-brown tint of colour.

Species. 22. (Mus. Cuming.)

CHAMA CORNUCOPIA. *Cham. testâ crassâ, circuiter ovatâ, concentricè rudè et irregulariter plicatâ, muticâ, valvarum marginibus lævigatis; albidâ, roseo pallidè tinctâ, intus intensè purpureâ.*

THE CORNUCOPIA CHAMA. Shell thick, circuitously ovate, concentrically rudely and irregularly plicated, free from scales or spines, margins of the valves smooth; whitish, faintly tinged with rose, intense purple within.

Hab. Red Sea.

I cannot discover any trace of external sculpture in this species, it is of curious circuitous growth and from a locality which contributes very little to the genus under investigation.

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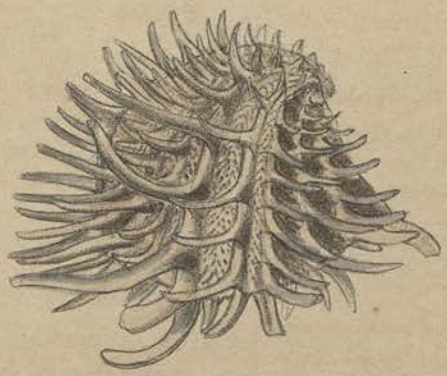

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Sowerby del et lith

Reeve imp

CHAMA.

PLATE V.

Species 23. (Mus. Cuming.)

CHAMA SORDIDA. *Cham. testâ ovatâ, valvâ inferiore in ætate valdè convexâ, valvis ambabus undique creberrimè striatis, striis elevatis, subundulatis, ab umbonibus radiantibus, hinc et hinc foliaceis, foliis posticè seriatis, valvarum marginibus crenulatis; corallo-rubescente, intus albidâ.*

THE MEAN CHAMA. Shell ovate, lower valve increasing very much in convexity with age, both valves very closely striated throughout, striæ raised, slightly undulately radiating from the umbones, here and there foliaceous, the foliations on the posterior side in rows, margins of the valve crenulated; light coral red, interior white.

BRODERIP, Trans. Zool. Soc., vol. i. p. 309. pl. 39. f. 8, 9.

Hab. Isle of Cuna, Central America (dredged from a depth of eighteen fathoms attached to rocks); Cuming.

The name awarded to this species by Mr. Broderip is rendered inapplicable by the circumstance of its having been found in much finer state of beautiful clear coral-red colour, sculptured throughout with fine undulating raised striæ, radiating from the umbones.

Species 24. (Mus. Cuming.)

CHAMA ASPERSA. *Cham. testâ ovatâ, valvâ superiore planulatâ, spinis parvis fornicatis marginem versus longiusculis erectis profusè concentricè dispositis, inferiore subprofundè convexâ, squamis lamellatis ad marginem spinæformibus confertissimè ornatâ, valvarum marginibus lævigatis; albâ, ferrugineo-rubro radiatâ vel aspersâ.*

THE SPRINKLED CHAMA. Shell ovate, upper valve flattish, ornamented with profuse concentric rows of small vaulted spines, rather long and erect towards the margin, lower valve rather deeply convex, with very close-set lamellated scales, spine-shaped at the margin, margins of the valves smooth; white, rayed or sprinkled with rust-red.

Hab. Tacloban, Isle of Leyte, Philippines (attached to stones); Cuming.

In this species, as in most of the genus, especially those that attach in groups, the spinous or squamate sculpture of the upper valve becomes modified into lamellæ in the lower, for the purpose of gaining attachment.

Species 25. (Mus. Cuming.)

CHAMA PLANATA. *Cham. testâ suboblongo-ovatâ, planiusculâ, valvâ superiore profusè squamatâ, squamis brevibus, minutis, subappressis, ab umbone seriatim radiantibus, inferiore lævi, squamis grandibus rudis per basem, valvarum marginibus lævibus; albâ, ferrugineo-rufo ab umbonibus radiatâ.*

THE FLATTENED CHAMA. Shell somewhat oblong-ovate, rather flattened, upper valve profusely scaled, scales short, minute, rather pressed forward, radiating in rows from the umbone, lower smooth, with large rude scales along the base, margins of the valves smooth; white, radiated from the umbones with rust-red.

Hab. Island of Guimaras, Philippines (attached to stones); Cuming.

The general aspect of this species is not much unlike that of the preceding, but it will be found on comparison to differ throughout; in form it appears naturally flatter, in colour more distinctly rayed, and the sculpture of the valves is of a different system and more than usually dissimilar.

Species 26. (Fig. *a* and *b* Mus. Cuming.)

CHAMA ARCINELLA. *Cham. testâ cordatâ, anticè lunulâ amplâ depressâ infra umbones; valvis ambabus, similibus, radiatim costatis, costis multispinosis, spinis interdum longissimis, tubulosis, spinarum interstitiis semper peculiariter excavato-punctatis, valvarum marginibus subtilissimè crenulatis; albâ aut lutescente, sæpissimè roseâ, intus aurantiâ, interdum autem raro vividè purpureâ.*

THE LITTLE ARCHER CHAMA. Shell heart-shaped, with a large depressed lunule beneath the umbones, both valves radiately ribbed, the ribs many-spined, spines sometimes very long, tubulous, interstices between the spines peculiarly excavately punctured, margins of the valves very finely crenulated; white or yellowish, most frequently stained with pink-red, interior orange, sometimes, but very rarely, deep purple.

LINNÆUS, Syst. Nat. (12th edit.) p. 1139.

Hab. West Indies (attached to shells, particularly the *Strombus pugilis*.)

This well-known species is extremely variable in size,

frequently attaching in groups like a bunch of nuts; the long-spined variety is of a more free and unrestricted growth.

Species 27. (Mus. Cuming.)

CHAMA FIBULA. *Cham. testâ orbiculari, valvâ superiore squamis brevibus lamellatis concentricè confertissimè exsculptâ, inferiore squamis paucioribus, elongatis, planoappresis, crenulatis; niveâ, ferrugineo-fusco interdum pallidè tinctâ, umbonibus peculiariter violaceis; intus albâ, ab umbonibus violaceo-purpureo radiatâ.*

THE BUTTON CHAMA. Shell orbicular, upper valve very closely concentrically sculptured with short lamellated scales, lower valve with fewer scales elongated and flatly appressed, margins of the valves very minutely crenulated; snowy white, sometimes palely stained with rust-brown, umbones peculiarly tinged with violet; interior white, rayed with violet purple from the umbones.

Hab. Island of Luzon, Philippines (attached to coral); Cuming.

A delicate rounded species, tinged with purple at the umbones both externally and internally.

Species 28. (Mus. Cuming.

CHAMA OBLIQUATA. *Cham. testâ obliquè ovatâ, trigonâ, lateraliter affixâ, valvâ superiore profusè minutissimè squamatâ, squamis ab umbone obliquè radiantibus, ad marginem subspinosis, inferiore compariter lævigatâ, per basem rudè lamellatâ, valvarum marginibus internè minutissimè crenulatis; albo fusco-purpureoque fere omnino tinctâ et radiatâ, intus albidâ.*

THE OBLIQUE CHAMA. Shell obliquely ovate, triangular, affixed by the side, upper valve profusely very minutely scaled, scales radiating obliquely from the umbone, spinous at the margin, lower comparatively smooth, rudely lamellated along the base, margins of the valves internally very minutely crenulated; white, almost entirely stained and rayed with rust and brown and purple; interior white.

Hab. Catbalonga, Isle of Samar, Philippines (attached to stones); Cuming.

Distinguished by its oblique triangular growth, darkly rayed and stained with colour and extremely minutely scaled.

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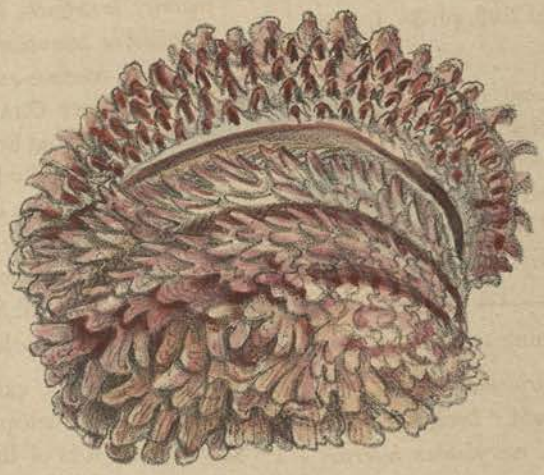

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Sowerby. del. et lith.

Reeve, imp.

CHAMA.

PLATE VI.

Species 29. (Mus. Cuming.)

CHAMA LOBATA. *Cham. testâ subrhomboideâ, anticè lobatâ, utrinque sinuosâ, valvis ambabus ab umbonibus radiatim sulcatis, concentricè laminatis, laminis valvæ superioris medio et posticè appresso-foliaceis, inferioris anticè appresso-foliaceis, valvarum marginibus internis crenulatis; niveâ, fuscescente pallidissimè radiatâ.*

THE LOBED CHAMA. Shell somewhat rhomboidal, lobed anteriorly, sinuous on each side, both valves radiately grooved from the umbones, concentrically laminated, laminæ of the upper valve appressly foliated in the middle and posterior side, of the lower on the anterior side, inner margins of the valves crenulated; snowy white, faintly tinged with pale brown.

BRODERIP, Trans. Zool. Soc. vol. 1. p. 303. pl. 38. f. 4, 5.

Hab. China; Reeves.

Mr. Broderip has recorded "Island of Nevis, West Indies" as the habitat of this very characteristic species; this must surely be an error, for there are several well-authenticated specimens in the British Museum, brought from China by John Reeves Esq., F.R.S., and I cannot learn that it has been received from any other locality.

Species 30. (Mus. Cuming.)

CHAMA RUPPELLII. *Cham. testâ suborbiculari, valvâ inferiori valdè productâ, crassiusculâ, lævigatâ, plus minusve erosâ; albidâ, valvarum marginibus internis vividè rufo-purpureis.*

RUPPELL'S CHAMA. Shell somewhat orbicular, lower valve very much produced, rather thick, smooth, more or less eroded; whitish, inner margins of the valves deep red-purple.

Hab. Red Sea; Rüppell.

Approximating closely to the *C. iostoma*, but from so remote a locality that I venture to distinguished it as a new species.

Species 31. (Mus. Cuming.)

CHAMA BRASSICA. *Cham. testâ suborbiculari-ovatâ, circuiter trigonâ, valvis ambabus rugosis, profusè squamatis, squamis valvæ superioris subfoliaceis, inferioris brevibus, erectis; albidâ, squamis roseis.*

THE CABBAGE CHAMA. Shell somewhat orbicularly ovate, circuitously triangular, both valves rough, profusely, squamate, scales of the upper valves slightly foliaceous, of the lower short and erect; whitish, scales pink.

Hab. Island of Cabul, Philippines (under stones at low water); Cuming.

An interesting curiously scaled species of peculiarly circuitous growth.

Fig. 3, *b. Chama imbricata, junior*, described at Sp. 3.

Species 32. (Mus. Cuming.)

CHAMA PELLUCIDA. *Cham. testâ orbiculari, circuiter trigonâ, lateraliter affixâ, valvis ambabus pulcherrimè concentricè lamellatis, lamellis parvis suberectis, valvarum marginibus minutissimè crenulatis; albidâ, peculiariter pellucidâ, coccineo-roseo ab umbonibus radiatâ.*

THE TRANSPARENT CHAMA. Shell orbicular circuitously triangular, affixed by the side, both valves very beautifully concentrically lamellated, lamellæ small, somewhat erect, margins of the valves very minutely crenulated; whitish, peculiarly transparent, rayed from the umbones with scarlet rose.

BRODERIP, Trans. Zool. Soc. vol. 1. p. 302. pl. 38. f. 3.

Hab. Iquiqui, Peru (attached to stones and shells); Cuming.

This beautiful and extremely interesting species is, I regret to say, very inadequately represented in the accompanying figure; it is of the most delicate texture, and has the appearance of being formed of transparent white wax rayed with bright scarlet rosr.

Species 33. (Mus. Cuming.)

CHAMA CARDITÆFORMIS. *Cham. testâ ovatâ vel transversim oblongâ, valvis ambabus radiatim minutissimè squamæliratis, squamis appressis, posticis majoribus, valvarum marginibus crenulatis; albâ, lirarum interstitiis posticè coccineo-rufis.*

THE CARDITA-SHAPED CHAMA. Shell transversely oblong, both valves radiately very minutely ridged with appressed scales, posterior the larger, margins of the valves crenulated; white, interstices between the ridges on the posterior side scarlet-red.

Hab ——?

Easily distinguished by its peculiar oblong growth which is not apparently accidental.

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Sowerby, del. et lith.

Reeve, imp

CHAMA.

PLATE VII.

Species 34. (Mus. Cuming.)

CHAMA VENOSA. *Cham. testâ circuiter trigonâ, lateraliter affixâ, valvis ambabus lævibus, radiatim subobsoletè tricostatâ, costis asperè nodulosis; albâ, lineis purpureo-roseis obliquis undique venosâ, intus albâ.*

THE VEINED CHAMA. Shell circuitously triangular, affixed by the side, both valves smooth, radiately somewhat obsoletely three-ribbed, ribs roughly noduled; white, obliquely veined throughout with purple-rose lines, interior white.

Hab. ——? (attached to shells.)

The blood-red lines with which the entire surface of this shell is painted are not less characteristic than the three faint sharply noduled ribs.

Species 35. (Mus. Cuming.)

CHAMA ECHINATA. *Cham. testâ subtrigono-ovatâ, lateraliter affixâ, valvis ambabus spinis brevibus tubulosis erectis profusè echinatis, valvarum marginibus lævibus; albidâ, ferrugineo- vel purpureo-fusco posticè tinctâ, intus croceo-coccineo cardinem versus tinctâ.*

THE PRICKLY CHAMA. Shell somewhat triangularly ovate, affixed by the side, both valves profusely prickled with short erect tubulous spines, margins of the valves smooth; white, stained on the posterior side with purple or rust-brown, interior tinged near the hinge with saffron-scarlet.

BRODERIP, Trans. Zool. Soc. vol. 1. p. 305. pl. 39. f. 5.

Hab. Porto Portrero, Central America (attached to rocks at low water); Cuming.

Profusely studded with small tubulous spiniform scales.

Species 36. (Mus. Cuming.)

CHAMA JANUS. *Cham. testâ circuiter trigonâ, valvâ inferiore et dimidio postici superioris lævibus vel obliquè obtusè liratis, squamarum brevium seriebus duabus radiantibus, valvâ superiore undique irregulariter appresso-squamatâ, valvarum marginibus lævibus; purpureo-rufâ, liris obliquis squamisque albis.*

THE TWO-FACED CHAMA. Shell circuitously triangular, lower valve and posterior half of the upper smooth or obliquely obtusely ridged, with two radiating rows of short scales, upper valve irregularly appressly squamate throughout, margins of the valves smooth; purple-red, oblique ridges and scales white.

Hab. Gallapagos Islands (attached to the large *Aviculæ*); Cuming.

The general aspect of this shell is not much unlike that of *C. venosa*, but the difference may be easily detected on examination; instead of being veined with fine lines of colour upon a white ground, the oblique ridges are raised upon a red ground, besides which the upper valve is characterized by a double style of both colour and sculpture, the anterior half being of a dull brick red colour and appressly scaled, whilst the posterior half is similar to the under valve. Mr. Broderip has figured this shell as the young *C. imbricata*, but it is far removed from that species, an immature example of which I have specially represented in the preceding plate at Fig. 3, *b*.

Species 37. (Mus. Cuming.)

CHAMA RUBEA. *Cham. testâ ovatâ, circuiter trigonâ, valvis ambabus rudè flexuosis et appresso-laminatis, squamis perpaucis, valvarum marginibus subtilissimè crenulatis; purpureo-rubrâ, squamis albidis, intus albâ, margine purpureâ.*

THE RUDDY CHAMA. Shell ovate, circuitously triangular, both valves rudely flexuous and appressly laminated, with a very few scales, margins of the valves very finely crenulated; purple-red, scales whitish, interior white, purple at the edge.

Hab. Cagayan, Island of Mindanao, Philippines (attached to stones); Cuming.

The under valve of the specimen here represented is more squamate, and the scales are more erect, than the upper.

Species 38. (Mus. Cuming.)

CHAMA EXOGYRA. *Cham. testâ ovatâ, circuiter trigonâ, valvis ambabus confertissimè appresso-laminatis, laminis rugosis subsquamatis, valvarum marginibus lævibus; lutescente-albâ, roseo tinctâ.*

THE OUTWARDLY-REVOLVED CHAMA. Shell ovate, circuitously triangular, both valves very closely appressly laminated, laminæ rough, somewhat scaled, margins of the valves smooth; yellowish-white, tinged with rose.

Conrad, Journ. Acad. Nat. Sci. Philadelphia.
Hab. Upper California.

There is nothing remarkable in this shell to characterize it particularly, though evidently distinct from any other.

Species 39. (Mus. Cuming.)

Chama Jukesii. *Cham. testâ ovatâ, valvis ambabus profusè et confertissimè brevispinosis, spinis valvæ inferioris subsquamatis; intus extusque niveâ, umbonibus apice pallidè purpureis.*

Jukes' Chama. Shell ovate, both valves profusely and very closely short-spined, spines of the lower valve somewhat squamate; snowy white within and without, umbones pale purple at the apex.

Hab. Cape Upstart, North Australia (on the coral reefs at low water); Jukes.

I dedicate this shell with a great deal of pleasure to Mr. Jukes, the zealous naturalist of H.M.S. 'The Fly', to whom this monograph is indebted through Mr. Cuming for several interesting species.

Species 40. (Mus. Cuming.)

Chama sarda. *Cham. testâ suborbiculari, valvis ambabus peculiariter exiliter obliquè striatis, squamis brevibus asperis remotis; intus extusque vividè corallo-rubrâ.*

The cornelian Chama. Shell somewhat orbicular, both valves peculiarly faintly obliquely striated, with sharp remote short scales; bright coral-red within and without.

Hab. Honduras (attached to coral); Dyson.

Rich in colour and very characteristic in sculpture, being crossed in an oblique direction throughout with faint striæ, and roughened here and there with short scales like the asperities of a coarse file.

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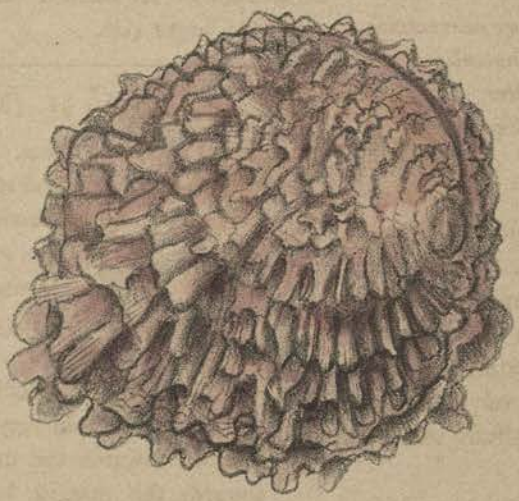

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Sowerby, del. et lith.

Reeve, imp.

CHAMA.

PLATE VIII.

Species 41. (Mus. Cuming.)

CHAMA FIMBRIATA. *Cham. testâ suborbiculari, valvis ambabus concentricè fimbriato-lamellatis, valvarum marginibus minutè crenulatis; lutescente-albâ.*

THE FIMBRIATED CHAMA. Shell somewhat orbicular, both valves concentrically fimbriately lamellated; margins of the valves minutely crenulated; yellowish white.

Hab. Point Cunningham, North Australia; Dring.

A very distinct species though its characters are set forth in few words; the lamellæ are not isolated as in most of the genus, but arranged in concentric continuous wavy frills.

Species 42. (Mus. Cuming.)

CHAMA CRISTELLA. *Cham. testâ semiorbiculari, circuiter trigonâ, lateraliter affixâ, valvâ superiore concentricè tenuissimè laminatâ, laminis appressis, squamulis minutis asperis subremotis, inferiore compariter lævigatâ, squamulis minutis retusis subremotis, valvarum marginibus crenulatis; albâ aut lutescente, corallo-roseo pulcherrimè tinctâ, sqamulis albis.*

THE LITTLE CREST CHAMA. Shell semiorbicular, circuitously triangular, affixed by the side, upper valve concentrically very finely laminated, laminæ pressed down, with minute sharp rather remote scales, lower valve comparatively smooth, with rather remote blunted minute scales, margins of the valves crenulated; white or yellowish, very beautifully stained with coral-rose, scales white.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. vi. p. 585.

Hab. Batavia (attached to stones); Cuming.

An extremely pretty and well-defined species, of which the example here figured has been satisfactorily indentified with Lamarck's original specimen in the collection of M. Delessert.

Species 43. (Mus. Cuming.)

CHAMA GRYPHINA. *Cham. testâ semiorbiculari, circuiter trigonâ, lateraliter affixâ, valvis ambabus concentricè laminatis, laminis appressis, anticè fimbriatis erectis, valvarum marginibus lævibus: albidâ, lutescente anticè tinctâ.*

THE CROOKED CHAMA. Shell semiorbicular, circuitously triangular, affixed by the side, both valves concentrically laminated, laminæ pressed down, fimbriated and erect on the anterior side.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. v. p. 587.

Hab. Sicily, Corsica.

Only known to Lamarck in a fossil state.

Species 6. Variety β (Fig. 6 *b*. Mus. Cuming.)

CHAMA MACROPHYLLA. *Testa plerumque grandior, omnino purpureo-lacca.*

THE LARGE-LEAVED CHAMA. Shell generally larger, purple-lake throughout.

Having already described this species at Plate II. Sp. 6. it only remains to notice the purple-lake variety of which I have since thought it necessary to give a representation on account of its marked difference in colour; it is also mostly of larger size.

Species 44. (Mus. Cuming.)

CHAMA SPINOSA. *Cham. testâ orbiculari, planiusculâ, valvâ superiore profusè et minutissimè squamatâ, squamis umbonem versus laminiferis, marginem versus tubulosis, spinosis, inferiore rudè squamatâ, squamis imbricatis et irregulariter fimbriatis, valvarum marginibus vix crenulatis; albidâ, spinis posticis plerumque ferrugineo-fusco tinctis.*

THE SPINOUS CHAMA. Shell orbicular, rather flat, upper valve profusely and very minutely scaled, scales laminiferous towards the umbone, tubulous and spinous towards the margin, lower valve rudely squamate, scales imbricated and irregularly fimbriated, margins of the valves scarcely crenulated; whitish, posterior spines mostly stained with rust-brown.

BRODERIP, Trans. Zool. Soc. vol. 1. p. 306. pl. 38. f. 8. and 9.

Hab. Lord Hood's Island, Pacific Ocean (attached to coral and shells); Cuming.

Distinguished by the narrow tubulous structure of the spines, which are appressed and range in fine laminæ towards the umbone.

Species 45. (Mus. Cuming.)

CHAMA PANAMENSIS. *Cham. testâ ovatâ, circuiter trigonâ, lateraliter affixâ, valvâ superiore posticè lævi, tenui,*

simè appresso-laminatâ, anticè rugosâ, rudè fimbriatâ, inferiore lævi, per basem lamellatâ, valvarum marginibus lævibus; albidâ, ferrugineo-fusco hic illic tinctâ.

The Panama Chama. Shell ovate, circuitously triangular, affixed by the side, upper valve smooth and very minutely appressly laminated on the posterior side, rough and rudely fimbriated on the anterior, lower valve smooth, lamellated along the base, margins of the valves smooth; whitish, stained here and there with rust-brown.

Hab. Panama (attached to stones); Cuming.

The upper valve of this shell is distinguished in a peculiar manner by its two-fold style of sculpture.

Species 46. (Mus. Cuming.)

Chama prætexta. *Cham. testâ ovatâ, valvis ambabus concentricè pulcherrimè fimbriatis, fimbriis tenuibus subpellucidis, grandibus, plus minusve erectis, valvarum marginibus lævibus; pallidè croceâ, fimbriis supra rufescentibus.*

The flounced Chama. Shell ovate, both valves very beautifully concentrically fimbriated, frills thin, subpellucid, large, more or less erect, margins of the valves smooth; pale yellow, frills reddish beneath.

Hab. —— ?

This truly delicate and beautiful shell was received by Mr. Cuming from a continental naturalist of some celebrity as the *C. croceata* of Lamarck, but it does not answer to the description. There are several Lamarckian species of this genus, and even the Linnæan *C. gryphoides*, which it is quite impossible to indentify with the least degree of certainty.

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Sowerby, del. et lith.

Reeve, imp.

CHAMA.

PLATE IX.

Species 47. (Mus. Cuming.)

CHAMA EXIGUA. *Cham. testâ parvâ, tenui, subpellucidâ, circuiter trigonâ, lateraliter affixâ, valvâ superiore minutissimè appresso-laminatâ et radiatim striatâ, subasperâ, inferiore divaricatim excavato-punctatâ, per basem lamellatâ; albâ.*

THE LITTLE CHAMA. Shell small, thin, somewhat transparent, circuitously triangular, affixed by the side, upper valve very minutely appressly laminated and radiately striated, rather rough, lower valve divaricately excavately punctured, lamellated along the base; white.

Hab. Singapore (dredged from sandy mud at the depth of seven fathoms attached to fragments of shells); Cuming.

A little transparent white shell of which Mr. Cuming collected several specimens; the lower valve is distinguished by a peculiarity of punctured sculpture somewhat analogous to that of the *C. arcinella*, there is no trace of it, however, in the upper valve, as in that species.

Species 48. (Mus. Cuming.)

CHAMA FRAGUM. *Cham. testâ suborbiculari, valvâ superiore concentricè tenuissimè fimbriato-laminatâ, laminis marginem versus subtubulosis, inferiore rudè tubuloso-squamatâ, valvarum marginibus minutè crenulatis; albâ, rufo-punctatâ, intus albidâ.*

THE STRAWBERRY CHAMA. Shell somewhat orbicular, upper valve concentrically very finely fimbriately laminated, laminæ somewhat tubulous towards the margin, lower valve rudely tubulously squamate, margins of the valves minutely crenulated; white, dotted with red, interior whitish.

Hab. Island of Mindoro, Philippines (attached to coral); Cuming.

The sculpture of this species somewhat approaches that of the *C. spinosa*; it is of a more minute and delicate character and easily distinguished on comparison.

Species 49. (Mus. Cuming.)

CHAMA FLORIDA. *Cham. testâ suborbiculari, valvis ambabus imbricatis, marginem versus eleganter fimbriato-laminatis, valvarum marginibus minutè crenulatis; pellucido-albâ, punctis vividè roseis ab umbonibus pulcherrimè radiatâ; intus albâ.*

THE FLORID CHAMA. Shell somewhat orbicular, valves imbricated, elegantly fimbriately laminated towards the margin, margins of the valves minutely crenulated; transparent white, very beautifully rayed from the umbones with bright rose dots, interior white.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. vi. p. 583.

Hab. Honduras; Dyson.

I refer this very characteristic shell to the above Lamarckian species solely on the authority of Mr. Hanley, who has no doubt of its being identical with the species known under that name in Paris; it does not agree very accurately with Lamarck's description, but as the growth of this genus is so variable I trust to his judgment in the matter.

Species 50. (Mus. Cuming.)

CHAMA VARIEGATA. *Cham. testâ oblongo-ovatâ, circuiter trigonâ, valvâ superiore lamellatâ, præcipuè in seriebus duabus posticis, lamellis latiusculis appressis, interstitiis obliquè rugoso-liratis, squamis perpaucis brevibus remotis, valvarum marginibus lævibus; corallo-rubrâ, liris lamellis squamisque albis, intus albidâ, rufo-fusco tinctâ.*

THE STRIPED CHAMA. Shell oblong-ovate, circuitously triangular, upper valve lamellated, especially in two rows on the posterior side, lamellæ rather broad and appressed, interstices obliquely transversely ridged, lower valve obliquely roughly ridged with a very few short remote scales, margins of the valves smooth; coral red, ridges lamellæ and scales white, interior whitish, stained with red-brown.

Hab Honduras; Dyson.

The colouring of this shell has a very pretty effect, the oblique ridges and other external sculpture being white upon a coral or orange-red ground.

Species 51. (Mus. Cuming.)

CHAMA CISTULA. *Cham. testâ orbiculari, posticè profundè sinuatâ, valvis ambabus peculiariter rudè lamellatâ et squamatâ, squamis ad margines subproductis, appressis, valvarum marginibus lævibus; albidâ, roseo-fuscescente variâ, intus albâ.*

MONOGRAPH

OF THE GENUS

CHITON.

"Each on his rock transfixed, the sport and prey
Of wracking whirlwinds."—*Milton.*

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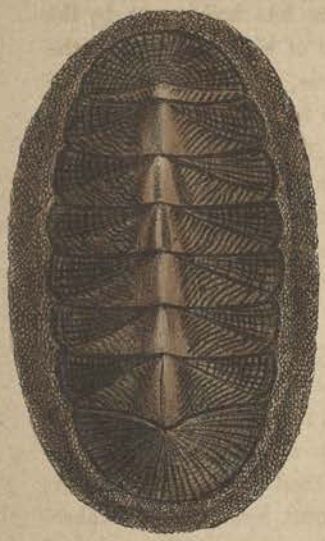

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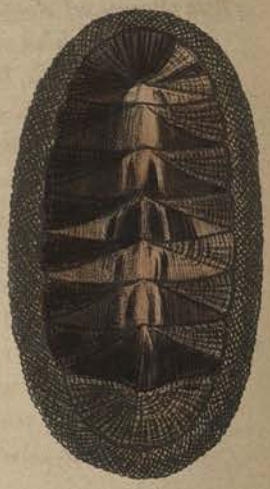

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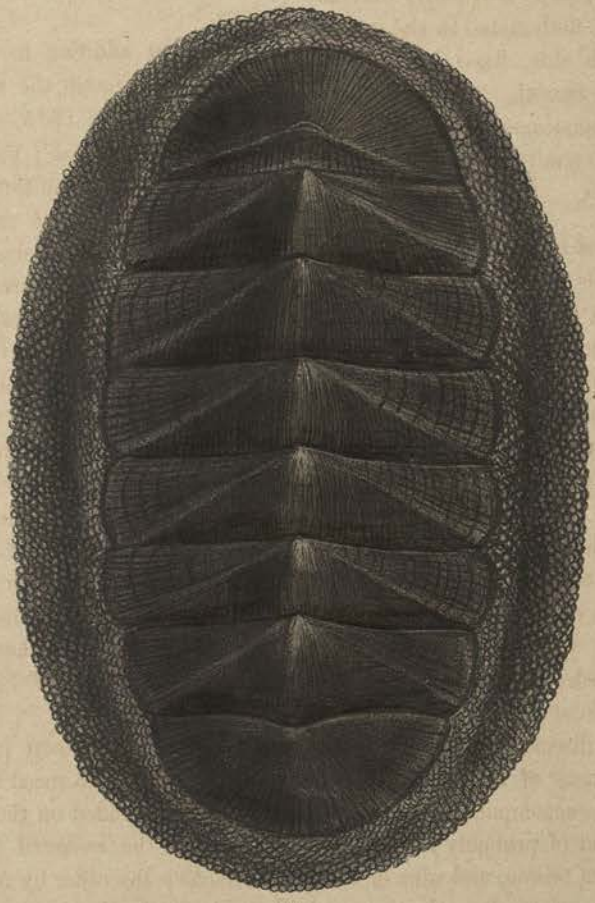

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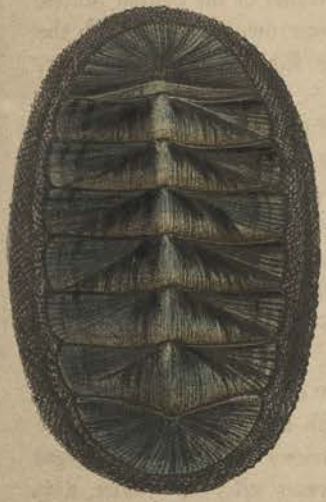

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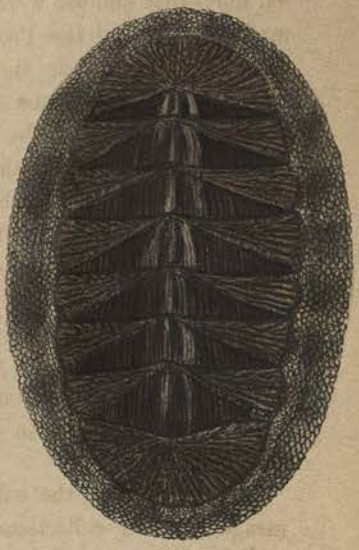

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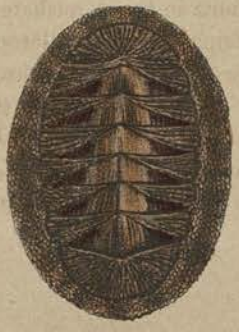

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Sowerby del. et lith.

Reeve, imp.

LIBRARY

CHITON.

PLATE I.

Genus CHITON, *Linnæus*.

Testa oblongo- vel elongato-ovatâ, octovalvis, valvis invicem mobilibus, sæpissimè transversim angustioribus, convexis, medio umbonatis, lateraliter subalatis, in cute cartilagineâ affixis, cute aut complanatâ, aut squamatâ, aut hispidâ, aut spinosâ, aut fasciculatâ, interdum latè expansâ, posticè incisâ, interdum valvis omnino obtegente.

Shell oblong or elongately ovate, eight-valved, valves moving upon one another, most frequently the narrower transversely, convex, umbonated in the middle, somewhat winged on each side, fixed in a cartilaginous cuticle, which is smooth, squamate, hairy, spinous, or fasciculate, sometimes widely expanded, and cut at the posterior extremity, sometimes entirely covering the valves.

No animals, among the retired inhabitants of the ocean, so long eluded the pursuit of the naturalist, as those which are the subject of the present monograph; dwelling in almost every sea short of the circumpolar temperature, yet very unevenly distributed throughout this extended range, the *Chitons* pass their sedentary existence in situations secure from displacement, and which it has been reserved to the zeal of recent travellers to penetrate. Little did it occur to the great reformer of the Linnæan school when recording, so late as 1819, in the sixth volume of his 'Animaux sans vertébres', a list of only six species, that nearly ten times that number were dwelling in retirement on the western shores of the Pacific, that as many more were living secluded among the rocks of Australia and New Zealand, and that the sum of these united would in twenty years be nearly doubled, by the discovery of species in other localities; yet such are the fruits of recent voyages, and the spirit of research which has accompanied them.

It must not be supposed that of probably two hundred, more or less, distinct species of *Chiton*, and nine or ten of *Chitonellus*, which I have now under investigation, only seven were known to Lamarck; upwards of twenty distinct kinds were figured thirty years before by Chemnitz in the 'Conchylien Cabinet'; some of these are indecipherable, but others, since left in obscurity, I have succeeded in identifying.

As a proof that the cabinets of Paris were singularly meagre in their collections of this genus, it is worth remarking that most of the species figured in the 'Encyclopédie Méthodique', are copied from the 'Conchylien Cabinet', and rendered not the less ambiguous by the transfer. Lamarck, at the time of his occupation on the genus, was afflicted with blindness, and, touching the circumstance of his only being able to identify five out of the five and twenty represented in the 'Encyclopédie', observes "Ce genre est fort nombreux en espèces, mais, malheureusement, privé de la vue, et hors d'etat de constater nous-mêmes les caractéres des espèces, nous n'en citerons qu'un petit nombre parmi celles que nous possédons."

The first addition to the tropical species of the genus, was made through the researches of Mr. Frembly, on the coast of Chili, in 1825, recorded in the 3rd volume of the 'Zoological Journal'; these were multiplied to an unprecedented extent by the indefatigable exertions of Mr. Cuming, in the same and adjacent localities, and subsequently in the Philippine Islands; whilst the inventory of species has been increased to its present magnitude, through the zealous assiduity of M. Quoy, in the Surveying Expedition of the 'Astrolabe', of Captain Sir Edward Belcher in the several Surveying Expeditions of the 'Blossom', the 'Sulphur' and the 'Samarang', of the Rev. W. V. Hennah, resident at the Cape of Good Hope, of Dr. Dieffenbach and Mr. Earl, in New Zealand, of Mr. Gunn, in Van Dieman's Land, and of Capt. Ince, in Australia; it must not be forgotten also that some few contributions have been made to the genus by Dr. Gould, Mr. Courthouy, and other naturalists of the United States, as well as from the shores of our own coast through the dredging exertions of Professor Edward Forbes and Mr. Mc'Andrew.

Regarding the soft parts of *Chiton*, two very opposite theories were advanced by contemporary authors; one by Linnæus, founded on the multivalve structure of the shell, in which he assigned the genus to a place among the *Lepades*; the other by Adanson, drawn from observations made on the shores of the Mediterranean a few years subsequently, in which he transferred the *Chitons* to the immediate vicinity of the *Patellæ*. The conclusions of the philosopher in the closet, were destined, however, to be overthrown by the observations of the naturalist in the field; the views of the illustrious traveller in Senegal having been confirmed many years after by Cuvier, notwithstanding the opposite opinions entertained by numerous intervening writers.

March, 1847.

Species 4. (Fig. *a*, and *b*. Mus. Cuming.)

CHITON STOKESII. *Chit. testâ ovatâ, valvis terminalibus striis peculiariter interruptis, undulatis, radiatis, cæteris areis centralibus longitudinaliter fortiter tenuiliratis, areis lateralibus, fortiter elevato-striatis, striis subdistantibus undulatis, obliquè decussatim divergentibus; olivaceo-nigricante, maculis perpaucis pallidis utrinque umbones; ligamento fortiter granoso-coriaceo, viridi-olivaceo, nigro-marmorato.*

STOKES' CHITON. Shell ovate, terminal valves radiated with peculiarly interrupted waved striæ, the rest with the central areas strongly longitudinally finely striated, lateral areas strongly elevately striated striæ rather distant, waved and obliquely diverging across; olive-black, with a few pale blotches near the umbones; ligament strongly granosely coriaceous, greenish-olive, marbled with black.

Variety β. Fig. 4, *b*.

Testa parva undique rufo varia.

Shell small, variegated with red throughout.

BRODERIP, Pro. Zool. Soc.. 1832.

Hab. St. Elena, West Columbia (under stones at low water); Cuming.

The style of the cross diverging striæ of the lateral areas should be carefully noticed in order to distinguish this species from its congeners.

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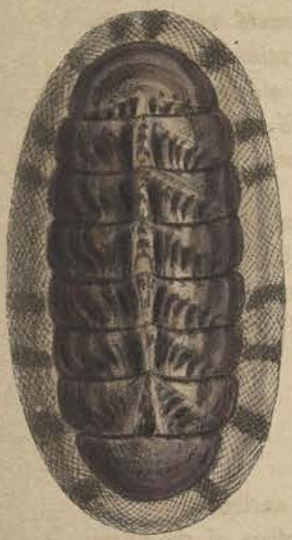

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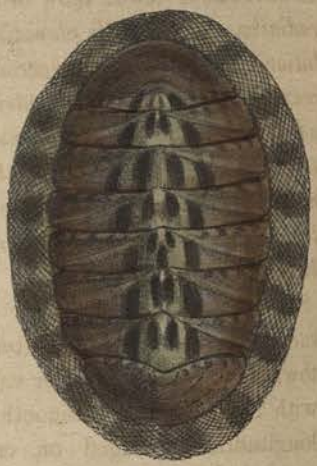

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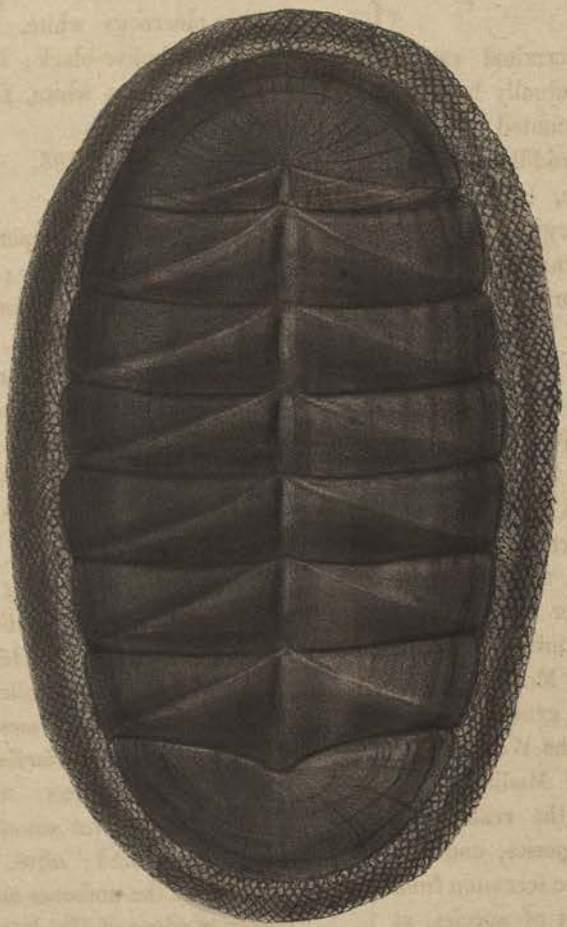

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CHITON.

PLATE II.

Species 5. (Mus. Cuming.)

CHITON SICULUS. *Chit. testâ ovatâ, valvis terminalibus radiatim striatis, striis planatis, basem versus gradatim latioribus, valvâ posticâ supernè umbonatâ, cæteris areis centralibus medio lævibus, utrinque fortiter longitudinaliter liratis, areis lateralibus radiatim elevato-striatis, striis par paria divergentibus; pallidè spadiceâ, arearum lateralium marginibus anticis albipunctatis; ligamento subtiliter granoso-coriaceo, spadiceo-rufo exiliter marmorato.*

THE SICILIAN CHITON. Shell ovate, terminal valves radiately striated, striæ flattened, gradually broader towards the base, posterior valve umbonated, the rest with the central areas smooth in the middle, strongly longitudinally ridged on each side, lateral areas radiately elevately striated, striæ diverging in pairs; light drab, anterior edges of the lateral areas dotted white; ligament finely granosely coriaceous, drab, faintly marbled with dull red.

GRAY, Spicilegia Zoologica, p. 5.

Chiton squamosus, var. auctorum.

Chiton Polii, Deshayes (not of Philippi).

Hab. Sicily.

Before the prolific discoveries of Chitons elicited the attention of naturalists to the minute, yet unerring distinctions of sculpture which are now presented to us, there were probably several species confounded under the old Linnæan title *squamosus*. Amongst the number was that under consideration, an inhabitant of the Mediterranean, amply distinguished, notwithstanding its general resemblance, from the original *C. squamosus* of the West Indies. Lamarck, and even the expositor of the Mediterranean conchology, Philippi, failed to discover the remarkable want of similarity in the detail of these species, and it is through the observations of Mr. Gray, whose secession from conchological pursuits, (in the elucidation of species, at least,) is to be deplored, that the difference was first noted, in his 'Spicilegia Zoologica'. M. Deshayes with his usual acumen appears to have made the same discovery, and, unacquainted with Mr. Gray's researches, distinguished the Sicilian species by the new title of *C. Polii*; the honoured name of the Neapolitan anatomist, was, however, already occupied by Philippi, in reference to another species. For particulars in which the *C. Siculus* and *squamosus* differ, see Sp. 16.

Species 6. (Mus. Cuming.)

CHITON MARMORATUS. *Chit. testâ ovatâ vel oblongo-ovatâ, valvis omnibus lævigatis aut minutissimè creberrimè puncturatis; cinereo-albidâ, olivaceo-nigricante peculiariter variegatâ et marmoratâ; ligamento squamato-coriaceo, cinereo-albo, nigricante plus minusve marmorato.*

THE MARBLED CHITON. Shell ovate or oblong-ovate, all the valves smooth or very minutely closely punctured; cinereous white, peculiarly variegated and marbled witholive-black; ligament squamately coriaceous, cinereous white, more or less marbled with black.

GMELIN, Syst. Nat. p. 3205.

Hab. —— ?

Though a species of comparatively ancient date, it is not one of common occurrence; the surface of the valves has a smooth polished appearance, but upon examining it with the assistance of the lens, it will be found to have a minute shagreen appearance, or studded with the finest and closest possible superficial punctures. The coriaceous grains of the ligament are of an oval squamate form.

Species 7. (Mus. Cuming.)

CHITON ARTICULATUS. *Chit. testâ suborbiculari-ovatâ, valvis omnibus lævibus aut minutissimè et creberrimè puncturatis; olivaceâ, medio virescente, nigro ad umbones et utrinque maculatâ, arearum lateralium marginibus posticis pallidè olivaceo nigroque articulatis; ligamento squamato-coriaceo, olivaceo-virescente, maculis grandibus saturatioribus marmorato.*

THE ARTICULATED CHITON. Shell somewhat orbicularly ovate, all the valves smooth, or very minutely and closely punctured; olive, greenish in the middle, blotched at the umbones and on each side with black, posterior edges of the lateral areas articulated with black and pale olive; ligament squamately coriaceous, olive-green, marbled with large blotches of a darker tint.

SOWERBY, Pro. Zool. Soc., 1832. p. 59.

Hab. St. Blas, Bay of California (under stones at low water); Cuming.

This species is perfectly distinct from the preceding, but partakes very much nevertheless of its characters; the valves are smooth yet alike distinguished by that minute

punctured engraving which is not visible to the unassisted sight; it is yet more closely allied to the *C. lævigatus*, but may be distinguished by its broader growth.

Species 8. (Mus. Cuming.)

CHITON GOODALLII. *Chit. testâ oblongo-ovatâ, subquadratâ, valvis terminalibus cæterarum areisque lateralibus punctis elevatis minutissimis subdistantibus aspersis, centralibus lævibus, concentricè striatis; olivaceo-nigrâ; ligamento squamato-coriaceo, squamis subumbonatis, nigro aut viridi-marmorato.*

GOODALL'S CHITON. Shell oblong-ovate, somewhat square, terminal valves and lateral areas of the rest sprinkled with very minute rather distant raised dots, central areas smooth, concentrically striated; olive-black; ligament squamately coriaceous, scales slightly umbonated, black or green-marbled.

BRODERIP, Pro. Zool. Soc., 1832. p. 25.

Hab. James Island, Gallapagos (in exposed situations, also under stones and ledges of rock); Cuming.

This fine species, named after the late venerable Provost of Eton College, was the first newly described shell of Mr. Cuming's collection. From *C. magnificus*, which it approximates in general aspect, it may be at once distinguished by its more oblong-square form, and want of longitudinal grooves and divergent ridges; in some specimens there is a series of faint blueish-green dashes on either side of the umbonal eminence.

Species 9. (Mus. Cuming.)

CHITON BOWENII. *Chit. testâ subelongato-ovatâ, medio angulato-elevatâ, valvis terminalibus cæterarum areisque lateralibus radiatim exiliter tenuisulcatis, centralibus lævibus, concentricè striatis; fuscâ, valvis spadiceo hic illic anticè flammulatis; ligamento subtiliter granoso-coriaceo, nigro.*

BOWEN'S CHITON. Shell somewhat elongately ovate, angularly elevated in the middle, terminal valves and lateral areas of the rest faintly finely grooved, central areas smooth, concentrically striated; brown, valves marked here and there on the anterior portion with fawn-coloured flames; ligament finely granosely coriaceous, black.

KING, Zool. Journal, vol. 5. p. 338.

Hab. Strait of Magalhaens; King.

Of a curious elongated form, peculiarly elevated along the umbonal eminence.

Species 10. (Mus. Cuming.)

CHITON AUSTRALIS. *Chit. testâ oblongo-ovatâ, valvis terminalibus cæterarum areisque lateralibus radiatim liratis, liris subgranosis, rudè undulatis, hic illic bifariam divergentibus, areis centralibus rudè longitudinaliter granoso-liratis, umbonibus lævibus; viridi-nigricante, medio viridiore umbonibus roseis; ligamento fortiter granoso-coriaceo, nigricante.*

THE SOUTHERN CHITON. Shell oblong-ovate, terminal valves and lateral areas of the rest radiately ridged, ridges subgranose, rudely undulated, here and there bifariously divergent, central areas rudely longitudinally granosely ridged, umbones smooth; greenish black, greener towards the middle, umbones pink; ligament strongly granosely coriaceous, blackish.

SOWERBY, Mag. Nat. Hist., 1840; Conch. Illus. f. 46.

An eadem? *Chiton evanidus*, Sowerby, Conch. Illus. f. 139.

Hab. Australia. Raines' Island, Torres Straits; Ince.

The very dark green body and pink umboes of this shell afford a contrast of colour similar to that exhibited of lighter hue in the *C. Magdalenensis*.

Species 11. (Mus. Cuming.)

CHITON ALBILINEATUS. *Chit. testâ subelongato-ovatâ, valvis terminalibus cæterarum areis lateralibus lævibus, nigricantibus, lineis subelevatis undulatis, interruptis, rugisve subdistantibus, conspicuè albis, radiatis, areis centralis lævibus, aut hic illic nigricantibus aut omnino cinereo-albo pulcherrimè et minutissimè concentricè undatis, summitate umbonali nigricante, lirâ latâ longitudinali albidâ utrinque notatâ, ligamento granoso-coriaceo, cinereo-albo.*

THE WHITE-LINEATED CHITON. Shell somewhat elongately ovate, terminal valves and lateral areas of the rest smooth, blackish, radiated with rather distant conspicuously white, interrupted, waved, slightly raised lines or wrinkles, central areas smooth, here and there black or altogether very beautifully minutely concentrically waved with ash-white, umbonal eminence black, marked with a broad longitudinal white line on each side; ligament granosely oriaceous, pale ash.

SOWERBY, Zool. Journal, vol. iv. p. 368.

Hab. Guaymas, Gulf of California.

The white radiated painting of this species is remarkably characteristic; on a black ground, it exhibits an unusually effective contrast.

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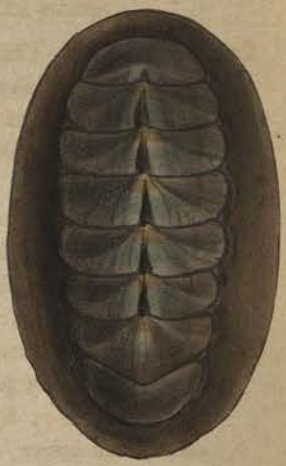

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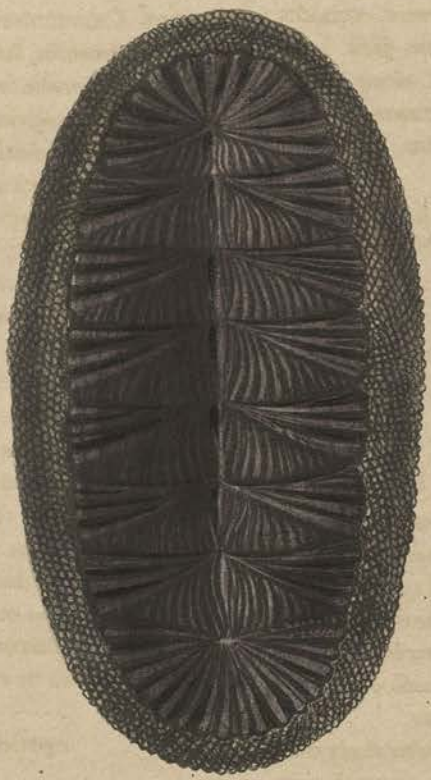

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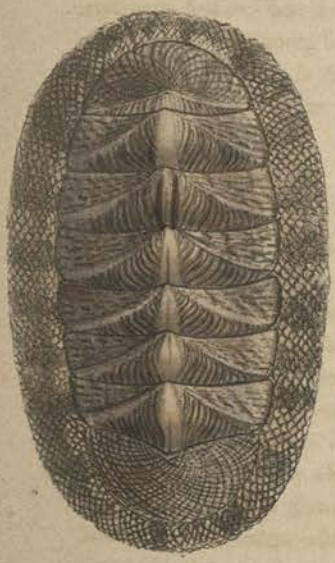

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CHITON.

PLATE III.

Species 12. (Mus. Cuming.)

CHITON LYELLII. *Chit. testâ oblongo-ovatâ, valvis subrotundatis, umbonibus rostratis, omnibus rugis impressis subtilibus obliquè et concentricè decussatis; valvis ad latera vividè viridibus, medio roseis, nigro per summitatem umbonalem nitidè pictis; ligamento corneo, granoso-arenaceo, fusco-marmorato.*

LYELL'S CHITON. Shell oblong-ovate, valves somewhat rounded, umbones beaked, all obliquely and concentrically decussated with fine impressed wrinkles; valves bright green at the sides, rose pink in the middle and neatly painted with black along the umbonal eminence; ligament horny, granosely arenaceous, fawn colour, marbled with brown.

SOWERBY, Pro. Zool. Soc., 1832. p. 26.

Hab. Pitcairn's Island, Polynesian Group (in small round hollows formed by *Echini* in exposed situations at low-water mark); Cuming.

This exquisite little species, named in honour of our celebrated geologist, is the gem of the genus; the colours are bright and brilliant, and disposed with adventitious beauty.

Species 13. (Mus. Cuming.)

CHITON BLAINVILLII. *Chit. testâ suborbiculari-ovatâ, valvis latissimis angustis, posticis parvis, terminali minimâ, valvâ anticâ terminali obscurè radiatâ, cæteris lævibus, concentricè lineatis, areis lateralibus concavo-impressis; roseo, albo, fusco viridique variâ; ligamento corneo, setis brevibus hinc et hinc remotè munito, posticè contracto, anticè enormiter producto.*

BLAINVILLE'S CHITON. Shell somewhat orbicularly ovate, valves very broad transversely, and narrow longitudinally, posterior small, the terminal very small, anterior terminal valve obscurely rayed, the rest smooth, concentrically lineated, lateral areas concavely impressed; variegated with pink, white, brown, and green; ligament horny, remotely furnished here and there with short bristles, contracted posteriorly, enormously produced anteriorly.

BRODERIP, Pro. Zool. Soc., 1832. p. 27.

Hab. Inner Lobos Island, Peru (attached to a stone at the depth of seventeen fathoms); Cuming.

This species, of which Mr. Cuming only collected a few examples, attached to one particular stone, at the above-named island, is chiefly remarkable on account of the extraordinary anterior extension of the ligament; extraordinary, because out of the vast amount of species forming the subject of this monograph, not one exhibits the least modification of such a condition. The shell is also remarkable, and widely distinct from any species hitherto discovered; together, they form a curious resemblance to the English coal-heavers's cap.

Species 14. (Mus. Cuming.)

CHITON CHILOENSIS. *Chit. testâ oblongo-ovatâ, valvis elevatiusculis, lævibus aut concentricè striatis; umbonibus subrostratis; lurido-viridi, medium versus pallidiore, fusco-nigricante pone umbones tinctâ; ligamento corneo, translucido.*

THE CHILOE CHITON. Shell oblong-ovate, valves rather elevated, smooth or concentrically striated, umbones a little beaked; lurid green, paler towards the middle, stained with a brown-black dash behind the umbones; ligament horny, transparent.

SOWERBY, Pro. Zool. Soc., 1832, p. 58.

Hab. Island of Chiloe, west coast of South America (under stones); Cuming.

I cannot detect the punctured striæ which Mr. Sowerby describes as characteristic of this species; it has been regarded a variety of the *C. elegans*, but may be readily distinguished by the more elevated and beaked structure of the valves, and absence of raised granules; there is also a pecularity in the colouring which does not accord with any of the multifarious varieties of painting which that species is known to exhibit.

Species 15. (Mus. Cuming.)

CHITON SULCATUS. *Chit. testâ oblongo-ovatâ, valvis omnibus fortiter sulcatis, liris valvarum terminalium arearumque lateralium radiatim dispositis, hic illic irregulariter bifariam divergentibus, centralium longitudinalibus, umbones versus leviter curvatis; undique anthracinâ; ligamento granoso-coriaceo, olivaceo-nigro.*

THE GROOVED CHITON. Shell oblong-ovate, all the valves strongly grooved, ridges of the terminal valves and of the lateral areas radiately disposed, here and there irregularly bifariously divergent, of the central areas longitudinal, slightly curved towards the umboes; coal-black throughout; ligament granosely coriaceous, olive-black.

WOOD, General Conchology, p. 16.

Hab. Lord Hood's and James Islands, Gallapagos (under stones); Cuming.

This fine species is of one uniform intense shining black, its absence of colour being amply compensated by the boldness of its sculpture.

Species 16. (Mus. Cuming.)

CHITON SQUAMOSUS. *Chit. testâ oblongo-ovatâ, valvis terminalibus decussatim granoso-radiatis, granis marginem versus subprominentibus, valvis cæteris areis lateralibus margine postico serratis, radiatim liratis, liris callositatibus parvis graniformibus, obliquè interruptis, areis centralibus vertice lævibus, utrinque liratis, liris umbones versus concentricè curvatis; olivaceo-cinereâ, hic illic saturatiorè variâ; ligamento squamato-coriaceo, olivaceo-cinereo, maculis grandibus olivaceis tessellato.*

THE SCALY CHITON. Shell oblong-ovate, terminal valves decussately granosely rayed, grains rather prominent towards the margin, the rest of the valves with the lateral areas serrated along the posterior edge, radiately ridged, ridges obliquely interrupted, with small grain-like callosities, central areas smooth along the top, ridged on both sides, ridges concentrically curved towards the umboes; olive-ash, here and there variegated of a darker tint; ligament squamately coriaceous, olive-ash, tessellated with large olive spots.

Variety β. (Pl. IV. Fig. 23. Mus. Cuming.)

Testa omnino nitidè olivaceo-nigricans.

Shell altogether shining olive-black.

LINNÆUS, Syst. Nat. (12th edit.) p. 1107.

Hab. West Indies.

When we consider that "*testâ octovalvi semistriatâ, corpore squamuloso*" was the sole diagnose which Linnæus attached to this species, it is not to be wondered that more than one should have been confounded with it by subsequent authors. Little did the profound author of the 'Systema Naturæ' think that the brief enumeration of characters just quoted, might be applied to some scores of species then abounding in their concealed places of attachment, along the shores of the South Pacific Ocean.

It is only necessary, however, in the present instance to refer to the *C. Siculus*, represented in Pl. 2; in that species which has been confounded with the *C. squamosus* by both Lamarck and Philippi, the longitudinal grooves of the central areas are straight, in this they are concentrically curved towards the umboes; the radiating ridges of the lateral areas are regular and smooth in the *C. Siculus*, in the *C. squamosus* they range obliquely and are interrupted at intervals with small granular callosities, the posterior edge of the areas, too, are serrated; the terminal valves of the former species, like the lateral areas, are rayed with simple, smooth ridges, divided hemispherically crosswise into granules, like an engine-turned watch-case, and the ligament is much more coarsely coriaceous.

Species 17. (Mus. Cuming.)

CHITON CHILENSIS. *Chit. testâ, oblongo-ovatâ, anticè subattenuatâ, valvis medio anticè tenuisulcatis, utrinque striis concentricis et obliquis obscurè decussatis, umbonibus lævibus, appressis; intensè castaneâ, ferè nigrâ, umbonibus lutescentibus rufo exiliter pictis; ligamento corneo, lævi, translucido.*

THE CHILI CHITON. Shell oblong-ovate, a little attenuated anteriorly, valves finely grooved in the middle anteriorly, obscurely decussated with concentric and oblique striæ on either side, umboes smooth, short, appressed; very dark red-chesnut, almost black, umboes yellowish faintly painted with red: ligament horny, smooth, transparent.

Hab. Valparaiso, Chili (in crevices of rocks and under stones); Frembly, Cuming.

Distinguished from *C. elegans*, amongst other characters, by the absence of granules, and different style of painting; and from *C. Chiloensis* by the broad appressed structure of the umboes, painting, &c.

Species 18. (Mus. Cuming.)

CHITON CYMBIOLA. *Chit. testâ oblongo-ovatâ, utrinque attenuatâ, præcipuè posticè, medio angulato-elevatâ, valvis undique lævibus, posticâ terminali umbonatâ; spadiceâ, areis lateralibus lineis fuscescentibus, acutè undatis, exiliter pictis, albo per marginem anticam articulatis, areis centralibus lineis fuscescentibus irregularibus longitudinatiter undulatis, ornatis, valvarum duarum anticarum (in hoc specimine) nigricante-castaneis; ligamento subtiliter granoso-coriaceo, spadiceo fuscoque tessellato.*

THE LITTLE BOAT CHITON. Shell oblong-ovate, attenuated at both ends, especially at the posterior, angularly raised in the middle, valves smooth throughout, posterior terminal valve umbonated, light fawn-colour, lateral areas faintly painted with light brown zigzag lines, articulated with white along the anterior edge, central areas ornamented with irregular longitudinally waved light brown lines, of the two anterior valves (in this specimen) blackish-chesnut; ligament finely granose, tessellated with brown and bay.

SOWERBY, Mag. Nat. Hist., 1840. Conch. Illus. f. 45. (not f. 85 and 86).

Hab. ——?

It should be observed that the articulated painting of this species is on the front edge of the lateral areas, not on the posterior, as in most species in which this design of painting occurs

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19a

21

22

19b

19c

23

CHITON.

PLATE IV.

Species 19. (Fig. *a*, *b*, *c*. Mus. Cuming.)

CHITON ELEGANS. *Chit. testâ oblongo-ovatâ, anticè subattenuatâ, valvis medio lævibus, umbonibus subdepressis, deinde striis obliquis utrinque obscurè decussatis, lateribus granulatis, granulis minutis, regularibus, subdistantibus; lutescente, nigro, rufo viridique variè pictâ, interdum omnino luteo-rufescente aut castaneo-nigricante; ligamento corneo, translucido.*

THE ELEGANT CHITON. Shell oblong-ovate, somewhat attenuated anteriorly, valves smooth towards the middle, umboes somewhat depressed, then decussated with oblique striæ, sides granulated, granules minute, regular, somewhat distant; yellowish, variously painted with black, red, and green, sometimes entirely yellowish, red or chesnut black; ligament horny, transparent.

FREMBLY, Zool. Journ. vol. iii. p. 203. pl. (supp.) 17. f. 6.

Hab. Valparaiso, Chili (under stones at low water); Frembly, Cuming.

This beautiful and well-known species, found abundantly in the Bay of Valparaiso, is extremely variable in its general painting; its most constant distinguishing character consists in the lateral portions of the valves being minutely, yet conspicuously, granulated.

Species 20. (Fig. *a*, and Fig. *b*. in Pl. V. Mus. Cuming.)

CHITON MAGDALENENSIS. *Chit. testâ elongato-ovatâ, valvâ terminali posticâ latiusculâ umbonatâ marginem versus peculiariter compressâ, anticâ attenuatâ, declivi, ambabus rudè radiatim striatis, valvis cæteris areis lateralibus peculiariter Pinnæformibus, rudè striatis, centralibus striis rudibus subdistantibus longitudinaliter undulatis; vitriolo-virescente, umbonibus roseis, ligamento corneo, rugoso-arenaceo.*

THE MAGDALENA CHITON. Shell elongately ovate, the terminal posterior valve rather broad, umbonated, and peculiarly compressed towards the margin, anterior attenuated, standing forward, both rudely radiately striated, the rest of the valves with the lateral areas peculiarly Pinna-shaped, and rudely striated, the central areas with rude longitudinal striæ, waved and rather distant; light copperas green, umbones pink; ligament horny, roughly arenaceous.

HINDS, Moll. Voyage of H.M.S. Sulphur, p. 54. pl. 19. f. 1.

Hab. Bay of Magdalena, California (in considerable numbers on the rocks); Hinds.

A very characteristic species; though approaching closely in detail of sculpture to the *C. australis*, the peculiarities of form and structure above noted amply distinguish it.

Species 21. (Mus. Cuming.)

CHITON DISJUNCTUS. *Chit. testâ oblongo-ovatâ, valvis peculiariter disjunctis, lævibus aut concentricè striatis, terminalibus cæterarum areisque lateralibus granulosis, granulis perpaucis, sparsis aut radiatim dispositis; chocolato-fuscâ, albido nigro-flammeo interdum solitariùs ornatâ, granulis vividè sapphiro-cæruleis; ligamento corneo, translucido.*

THE DISJOINED CHITON. Shell oblong-ovate, the valves peculiarly disjoined, smooth or concentrically striated, terminal valves and lateral areas of the rest very finely granulated, granules very few in number, scattered or disposed in rays; chocolate-brown, sometimes solitarily marked with white, curiously flamed with black, granules bright sapphire blue; ligament horny, somewhat transparent.

FREMBLY, Zool. Journal, vol. iii. p. 203.

Hab. Valparaiso (under stones in mud at low water); Cuming.

This is a remarkable species both in respect of form and painting; the valves are not disjoined in reality, but have that appearance outwardly, in consequence of being enveloped to a certain extent, by horny ligament. The chief peculiarity in the painting consists in the bright blue granules, but these are so minute as to be easily overlooked.

Species 22. (Mus. Cuming.)

CHITON COQUIMBENSIS. *Chit. testâ subelongato-ovatâ, valvâ terminali anticâ lævigatâ, posticâ utrinque carinatâ, cæterarum areis lateralibus granoso-carinatis, centralibus medio sulcis duobus latiusculis punctatis radiatis, sulcis angustis arcuatis numerosis confertis prope laterum carinas; nigricante-chocolato-fuscâ; ligamento corneo, subarenaceo, nigricante, processibus longitudinaliter oblongis fuscescentibus undique munito.*

The Coquimbo Chiton. Shell somewhat elongately ovate, anterior terminal valve smooth, posterior keeled on both sides, lateral areas of the rest granosely keeled, central areas rayed with two rather broad punctured grooves with numerous close-set arched narrow grooves near the keels of the sides; dark chocolate-brown; ligament horny, subarenaceous, blackish, furnished with light brown longitudinally oblong processes throughout.

Frembly, Zool. Journal, vol. iii. p. 197.

Hab. South side of Coquimbo Bay, Chili (in exposed situations on rocks); Frembly, Cuming.

The ligament of this shell is quite peculiar, I am not aware that there is the least approximation in respect to its curious oblong processes in any other species. Living in exposed situations the valves are for the most part more or less eroded at the umbones.

For description of Fig. 23, see Pl. 3. Sp. 16. *Chiton squamosus*, var. β.

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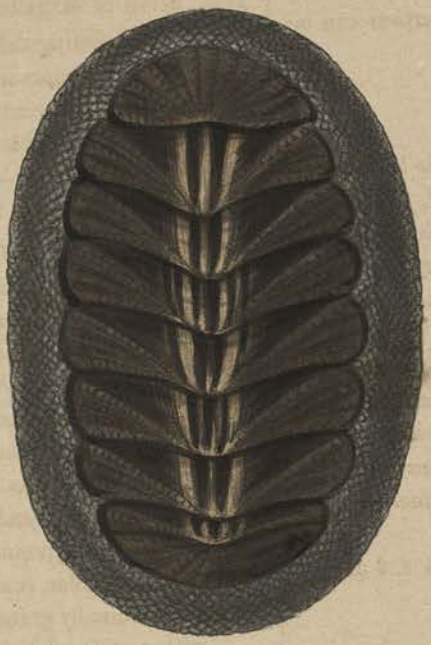
26a



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20b

26c

26b

CHITON.

PLATE V.

Species 24. (Mus. Cuming.)

CHITON GRANATUS. *Chit. testâ oblongo-ovatâ, valvis fortiter rugoso-granatis, præsertim ad latera, umbonibus lævibus vel erosis; sordidè cinereâ, granis nigricantibus, summitate umbonali nigro-maculatâ; ligamento corneo, atro.*

THE GRANITE CHITON. Shell oblong-ovate, valves strongly roughly grained, especially at the sides, umboes smooth; dirty ash or stone colour, grains blackish, umbonal eminence blotched with black; ligament horny, jet black.

Hab. —— ?

A new species so distinct in itself, that I am not aware of any hitherto collected with which a comparison can be instituted.

Species 25. (Mus. Cuming.)

CHITON CASTANEUS. *Chit. testâ ovatâ, valvis lævibus aut minutissimè puncturatis; cinereo-spadiceâ, flammis albidis minutis, rufo-punctatis, variâ, areis lateralibus margine postico articulatis valvis interdum duabus aut pluribus intensè castaneis; ligamento, corneo, arenaceo, sordidè fusco.*

THE CHESNUT CHITON. Shell ovate, valves smooth or very minutely punctured; ashy fawn colour, mottled with minute red-spotted whitish flames, posterior edges of the lateral areas articulated, sometimes two or more of the valves deep chesnut; ligament horny, arenaceous, dirty brown.

WOOD, General Conchology, p. 13. pl. 2 and 3. f. 2 and 3. (not *C. castaneus*, Quoy).

Hab. Cape of Good Hope; Brown.

The chief variation in the colour of this species consists in its being more or less enveloped by a veil, as it were, of intense chesnut; sometimes it covers it entirely, sometimes, as in the specimen here figured, it appears on the terminal valves only.

Species 26. (Fig. *a*, *b*, *c*. Mus. Cuming.)

CHITON FASTIGIATUS. *Chit. testâ oblongo-ovatâ, interdum medio subelevatâ, valvis lævibus, concentricè striatis, terminalibus cæterarum areisque lateralibus radiatim puncturatis; fuscâ vel albidâ, lineis concentricis saturatioribus variè pictâ, summitate umbonali interdum fuscâ; ligamento, corneo, translucido.*

THE SHARP-ANGLED CHITON. Shell oblong-ovate, sometimes rather elevated in the middle, valves smooth, concentrically striated, terminal valves and lateral areas of the rest radiately punctured; brown or whitish, variously painted with concentric lines of a darker colour, umbonal summit sometimes dark brown; ligament horny, transparent.

GRAY, Sowerby, Conch. Illus. Cat. n. 76.

Hab. Strait of Magalhaens.

The chief distinguishing features of this species are the rays of minute punctures upon the terminal and lateral areas, and the concentric style of colouring which is the same, however variable the tint.

Species 27. (Mus. Cuming.)

CHITON GRANOSUS. *Chit. testâ ovatâ, valvis crassiusculis, terminalibus cæterarum areisque lateralibus radiatim granulatis, granulis solitariis, subdistantibus, interdum irregularibus, areis centralibus tenuissimè autem perspicuè longitudinaliter granoso-liratis; atrâ, maculâ albidâ rudi oblongâ, utrinque umbones ornatâ; ligamento fortiter granoso-coriaceo, granis subadamantinis.*

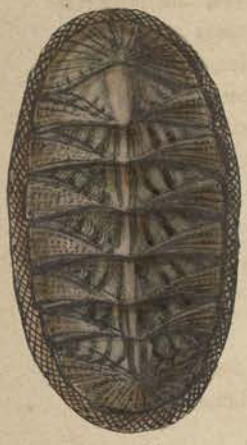
THE GRANOSE CHITON. Shell ovate, valves rather thick, terminal valves and lateral areas of the rest radiately granulated, granules solitary, rather distant, sometimes irregular, central areas very finely but distinctly longitudinally granosely ridged; jet black, ornamented with a rude whitish oblong blotch on each side the umboes; ligament strongy granosely coriaceous, somewhat diamond-shaped.

FREMBLY, Zool. Journal, vol. iii. p. 200. pl. (supp.) 17. f. 1.

Hab. Valparaiso, Chili (in the fissures of rocks, generally out of reach of the breakers); Frembly, Cuming.

Mr. Frembly observes that this species, like many *Patellæ*, is sometimes found at such a distance from the water, that it must pass a considerable portion of its existence apart from it.

February, 1847.



28b

28a

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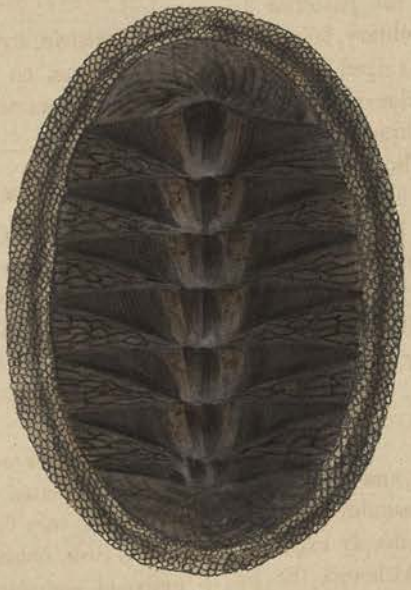

30

31

32b

32a

LIBRARY OF THE ROYAL ASIATIC SOCIETY

Sowerby, del. et lith.

Reeve, imp.

CHITON.

PLATE VI.

Species 28. (Mus. Cuming.)

CHITON FOVEOLATUS. *Chit. testâ ovatâ, valvis utrinque peculiariter excavatis, terminalibus, posticâ umbonatâ, granoso-radiatis, granis solitariis, cæterarum areis lateralibus solidis, elevatis, granoso-liratis, sulcis interstitialibus subexcavatis, arearum lateralium declivitatibus anticis aut lævibus aut obliquè corrugato-striatis; viridescente, olivaceo-fusco variâ, vel olivaceo-nigricante, areis lateralibus hic illic pallidioribus; ligamento squamato-coriaceo, olivaceo-viridi.*

THE PITTED CHITON. Shell ovate, valves peculiarly excavated on each side, terminal valves, the posterior umbonated, granosely radiated, grains solitary, lateral areas of the rest solid, raised, granosely ridged, interstitial grooves somewhat hollowed, anterior declivities of the lateral areas either smooth or obliquely ridged, central areas smooth in the middle, obliquely corrugately striated on both sides; greenish, variegated with olive-brown, or olive-black, the lateral areas being here and there paler; ligament squamately coriaceous, olive-green.

SOWERBY, Mag. Nat. Hist., 1840. Conch. Illus. f. 60.

Eadem var. *Chiton excavatus*, Gray? Sowerby, Conch. Ill. f. 131.

Hab. Jamaica.

This species is extremely variable in colour and general style of painting, though mostly of rather a sombre hue; but it may be readily distinguished by the deeply excavated recesses between the lateral areas. Although the figures of *C. foveolatus* and *excavatus* in Mr. Sowerby's 'Conchological Illustrations,' present such a different aspect, I have no doubt of their specific relation, the former having been described and figured from an inferior example.

Species 29. (Mus. Cuming.)

CHITON CRENULATUS. *Chit. testâ oblongo-ovatâ, anticè subattenuatâ, valvis terminalibus, posticâ umbonatâ, retusâ, cæterarum areis lateralibus, rugoso-granulatis, granulis irregularibus, vix radiantibus, areis centralibus medio unicarinatis, utrinque concentricè striatis, striis elevatis, undulatis, quasi corrugatis; albido-roseâ, utrinque viridescente, lineis nigro-viridis undulatis, concentricis ornatâ; ligamento corneo, translucido.*

THE CRENULATED CHITON. Shell oblong-ovate, a little attenuated anteriorly, terminal valves, the posterior umbonated and retuse, and lateral areas of the rest roughly granuled, granules irregular, scarcely radiating, central areas with a single keel along the middle, concentrically striated on both sides, striæ raised, waved, as if wrinkled; whitish rose, greenish on each side, ornamented with very dark green concentric waved lines; ligament horny, transparent.

BRODERIP, Pro. Zool. Soc., 1832. p. 27.

Hab. Panama, Central America (under stones below low water mark); Cuming.

The concentric striæ of this species form an oblique crenulated range, on each side the umbonal eminences, which is very characteristic.

Species 30. (Mus. Cuming.)

CHITON PATULUS. *Chit. testâ subabbreviato-ovatâ, valvis terminalibus cæterarum areisque lateralibus liris brevibus interruptis decussatim reticulatis, areis centralibus tenuissimè granuloso-liratis; anthracinâ, maculâ rudi oblongâ albidâ utrinque summitatem umbonalem; ligamento granoso-coriaceo, granis grandibus, atro.*

THE WIDE CHITON. Shell somewhat abbreviately ovate, terminal valves and lateral areas of the rest decussately reticulated with short interrupted ridges, central areas very finely granosely ridged; coal-black, with a rude oblong whitish blotch on each side the umbonal eminence; ligament granosely coriaceous, grains large, jet black.

SOWERBY, Mag. Nat. Aist., 1840. Conch. Illus. f. 134.

Hab. ——?

The difference between the *C. patulus* and *granosus* is sufficiently manifest, notwithstanding their identity of colour and general aspect; the terminal valves and lateral areas of the former are rayed with granules, whilst in the latter they are characterized by a distinct net-work; the *C. patulus* and *Stokesii* scarcely differ, except in form and obesity, and I very much doubt if they are more than local varieties of the same species. I have hesitated, however, to adopt this opinion, because Mr. Cuming has specimens of each, easily to be recognized from the other without any intermediate state.

Species 31. Mus. Cuming.

CHITON VOLVOX. *Chit. testâ subelongato-ovatâ, valvis undique tenuissimè liratis, liris angustis, vix undulatis, interstitiis peculiariter crenulato-clathratis, valvarum umbonibus vellicatis, acutè erectis, valvâ terminali posticâ parvâ, ad extremitatem umbonatâ; albidâ, lateribus viridibus, areis lateralibus nigro-viridi tessellatis, umbonibus roseo-purpureis; ligamento posticè fissurato, arenaceo-coriaceo, fusco.*

THE CATERPILLAR CHITON. Shell somewhat elongately ovate, valves very finely ridged throughout, ridges narrow, slightly waved, interstices peculiarly crenulately latticed, umboes of the valves pinched and sharply erect, posterior terminal valve small, umbonated to the extremity; ligament slit at the posterior end, arenaceously coriaceous, brown.

Hab. Sydney, New Holland; Jukes.

An extremely interesting species, in which the umboes have a pinched erect growth, and are prickly-pointed; it is altogether a most distinct species.

Species 32. (Fig. *a*, and *b*. Mus. Cuming.)

CHITON WATSONI. *Chit. testâ oblongo-ovatâ, valvis omnibus lævibus et subtilissimè incisis, sulcis ab umbonibus radiantibus, areis lateralibus vix elevatis; olivaceo- vel rufo-fuscâ, viridescente interdum concentricè maculatâ, summitate umbonali nigricante-fuscâ; ligamento corneo, fusco, setis brevissimis, cirris nigris ad interstitia lateralia valvarum, munito.*

WATSON'S CHITON. Shell oblong-ovate, all the valves smooth and finely engraved, the grooves radiating from the umboes, lateral areas but little raised; olive or reddish-brown, sometimes concentrically splashed with pale green, umbonal eminence blackish-brown; ligament horny, brown, furnished with very short bristles, with tufts of black curled hair at the lateral interstices of the valves.

SOWERBY, Mag. Nat. Hist. 1840. Conch. Illus. f. 81, 82, 130.
An eadem? *Chiton castaneus*, Quoy (not of Wood).
Hab. Cape of Good Hope.

This species varies in colour from a deep reddish mahogany brown to an olive-brown, more or less variegated with concentric splashes of light green, the umbonal eminence being always darkened with a series of longitudinally triangular spots of much darker brown, nearly black; the lateral interstices of the valves are mostly filled with rude tufts of harsh curled bristly hair.

33

34a

34b

34c

35

36

37a

38

39

37b

CHITON.

PLATE VII.

Species 33. (Mus. Cuming.)

CHITON LINEATUS. *Chit. testâ ovatâ, valvis undique lævibus, areis lateralibus vix elevatis; aureo-lutescente, ad latera lineis rufis albimarginatis, longitudinaliter obliquis, subundulatis, pulcherrimè virgatâ, summitate umbonali maculâ rufâ trigonâ hic illic pictâ; ligamento corneo, translucido.*

THE LINEATED CHITON. Shell ovate, valves smooth throughout, lateral areas scarcely raised; orange yellow, beautifully striped at the sides with red white-edged lines longitudinally obliquely ranged and a little waved, umbonal eminence painted here and there with a triangular red blotch; ligament horny, transparent.

WOOD, General Conchology, p. 15. pl. 2. f. 4 and 5.

Hab. Sitka, North California, Hinds.

An exquisitely beautiful species, easily recognised by the accompanying figure showing its very peculiar style of painting.

Species 34. (Fig. *a*, *b*, and *c*. Mus. Cuming.)

CHITON LINEOLATUS. *Chit. testâ oblongo-ovatâ, anticè attenuatâ, valvis terminalibus cæterarum areisque lateralibus minutissimè granulatis, centralibus lævibus; luteo-fulvâ, lineis undulatis rufo-castaneis concentricis regulariter pictâ, maculis rufo-castaneis pluribus aut minoribus; ligamento corneo, translucido.*

THE FINELY-LINEATED CHITON. Shell oblong-ovate, somewhat attenuated anteriorly, terminal valves and lateral areas of the rest very minutely granulated, central areas smooth; yellowish-fulvous, regularly painted with reddish chesnut concentric waved lines, and more or less blotched with the same colour; ligament horny, transparent.

FREMBLY, Zool. Journal, vol. iii. p. 204. pl. (supp.) 17. f. 7.

Hab. Valparaiso, Chili (in clefts of the rocks at low-water); Frembly, Cuming.

The *Chiton lineolatus* was introduced by Mr. Frembly, with some anxiety as to the propriety of it being considered a species distinct from *C. elegans*; and it is in truth a very questionable one. It was at one time thought to present a distinction, in having the lateral areas punctured instead of granulated, the dots impressed in place of being raised, but it is not so; and it only remains to determine whether its concentric lineated painting is of sufficient importance to constitute it a species. In taking a review of the genus I am inclined to think, that however variable the Chitons may be in colour, there is no great inconstancy in their style of painting; it is true that this and one or two other species are more or less enveloped by a dark chesnut veil, but where the pattern is exposed to view the design is invariably permanent.

Species 35. (Mus. Cuming.)

CHITON LÆVIGATUS. *Chit. testâ oblongo-ovatâ, valvis omnibus lævibus aut minutissimè et creberrimè puncturatis; olivaceâ, medio lutescente, maculis plurimis nigris oblongis variegatâ, valvis terminalibus cæterarum areisque lateralibus lineis subtilibus nigricantibus radiatis; ligamento squamato-coriaceo, squamis parvis, olivaceo-virescente, maculis grandibus saturatioribus marmorato.*

THE SMOOTH CHITON. Shell oblong-ovate, all the valves smooth or very minutely and closely punctured; olive, yellowish in the middle, variegated with several oblong black blotches, terminal valves and lateral areas of the rest rayed with fine blackish lines; ligament squamately coriaceous, scales small, olive-green, marbled with large spots of a darker hue.

SOWERBY, Pro. Zool. Soc., 1832.

Hab. Guaymas, Bay of California (under stones); Ealing, H.M.S. Sapphire.

The sculpture of this species is precisely similar to that of the *C. articulatus*, and it differs little in colour and design, except in having a series of fine black rays on the terminal and lateral valves, whilst the articulated pattern along the anterior edge of the valves of that species is wanting in this; in form it is more oblong, and this variation appears to be permanent.

Species 36. (Mus. Cuming.)

CHITON ÆREUS. *Chit. testâ oblongo-ovatâ, medio angulato-elevatâ, valvis undique rudè impresso-striatis, summitate umbonali lævi; sordidè viridi; ligamento granoso-coriaceo.*

THE COPPER CHITON. Shell oblong-ovate, angularly raised in the middle, valves rudely impressly striated throughout, umbonal eminence smooth; dull green; ligament granosely coriaceous.

Hab. New Zealand; Earl.

Very characteristic in appearance, though simple in detail; the colour is an uniform dull green, except along the rubbed umbonal summit, where it has a copperas hue.

Species 37. (Fig. *a*, and *b*. Mus. Cuming.)

Chiton Hennahii. *Chit. testâ ovatâ, subplanatâ, valvis transversim latiusculis, longitudinaliter angustis, undique subtiliter granoso-striatis; fusco aut rubente, concentricè lineatâ, maculâ oblongâ nigricante utrinque umbones interdum pictâ; ligamento corneo, setis brevissimis perpaucis asperso.*

Hennah's Chiton. Shell ovate, somewhat flattened, valves transversely rather broad, longitudinally narrow, finely granosely striated throughout; brown or reddish, concentrically lineated, sometimes painted with an oblong blackish spot on either side of the umboes; ligament horny, sprinkled with a few very short bristles.

Gray, Spicilegia Zoologica, p. 5.

Hab. Callao Bay, Peru (found attached to *Pectens* in sandy mud, at a depth of from five to seven fathoms); Cuming.

The habits of this and the following species appear to differ from the generality, in living attached to shells; the *C. Hennahii* may be readily distinguished by its broad peculiarity of form.

Species 38. (Mus. Cuming.)

Chiton Swainsoni. *Chit. testâ oblongo-ovatâ, anticè subattenuatâ, valvis leviter rotundatis, crassiusculis, medio elevatis, terminalibus cæterarum areisque lateralibus creberrimè granoso-radiatis, centralibus longitudinaliter tenuissimè sulcatis; aureo-luteâ, lineis sanguineo-fuscis concentricis undulatis undique creberrimè pictâ, maculâque oblongâ utrinque umbones; ligamento corneo, translucido.*

Swainson's Chiton. Shell oblong-ovate, a little attenuated anteriorly, valves slightly rounded, rather thick, raised in the middle, terminal valves and lateral areas of the rest granosely rayed, central areas longitudinally finely grooved; golden yellow, very closely painted throughout with waved concentric red brown lines, and an oblong blotch of the same colour on either side of the umboes; ligament horny, transparent.

Sowerby, Pro. Zool. Soc., 1832. p. 27.

Hab. Iquiqui and Callao, Peru (found attached to *Mussels* and *Pectens*, at a depth of from seven to nine fathoms); Cuming.

Neither of Mr. Sowerby's figures in the 'Conchological Illustrations', and the plate which accompanies this, give anything more than a general outline of this species; it is distinguished by characters which are too minute for pictorial display, and the chief of these consists in its style of painting. The ground colour of the shell, which is grooved and granulated, is of a deep yellow, and it is painted throughout with deep morone lines, disposed concentrically, and a little waved, after the design of the *C. lineolatus*, but finer and closer set.

Species 39. (Mus. Cuming.)

Chiton fulvus. *Chit. testâ oblongo-ovatâ, valvis terminalibus cæterarum areisque lateralibus striis irregulariter et superficialiter radiatis, centralibus longitudinaliter tenuissimè striatis, striis elevatis, granosis; lividofulvo-fuscâ, striis longitudinalibus et radiantibus opacocæruleo-albis; ligamento corneo, translucido.*

The fulvous Chiton. Shell oblong-ovate, terminal valves and lateral areas of the rest irregularly and superficially rayed with striæ, central areas very finely longitudinally striated, striæ raised, granose; livid fulvous brown, longitudinal and radiating striæ opake blueish white; ligament horny, transparent.

Wood, General Conchology, p. 7. pl. 1. f. 2.

Hab. Coasts of Spain and Portugal.

This species presents a peculiarity of painting which cannot be adequately represented in an engraving; a series of fine opal thread-like lines upon a dark fulvous brown ground, looking as if they were superadded by artificial means in body-colour. The central areas, as figured by Mr. Wood thirty years since, are sometimes inclined to yellow.

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CHITON.

PLATE VIII.

Species 40. (Fig. *a* and *b*, Mus. Cuming.)

CHITON ELONGATUS. *Chit. testâ elongatâ, valdè angustâ, valvâ terminali anticâ octofariam carinatâ, interstitiis inter carinas alternatim obliquè sulcatis posticâ ad extremitatem umbonatâ, valvis cæteris creberrimè tenuisulcatis, areis centralibus sulcis longitudinalibus, lateralibus anticè carinatis, sulcis obliquis; cinereâ aut purpureo-fuscâ, carinis albo fuscoque undique articulatis; ligamento lato, corneo, scabro, setis brevibus minutis obsito, posticè fissurato.*

THE ELONGATED CHITON. Shell elongated, very narrow, anterior terminal valve eight-keeled, interstices between the keels alternately obliquely grooved, posterior umbonated to the extremity, the rest of the valves very closely finely grooved, central areas with the grooves longitudinal, lateral areas, keeled along the front, with the grooves oblique; ash or purple-brown, keels articulated throughout with white and brown; ligament broad, horny, rough, beset with very minute short bristles, slit at the posterior end.

Hab. Raines' Island, Torres Straits, New Holland; Ince.

An interesting new species allied to the *C. alatus*, but of more diminutive proportions, with the valves more square.

Species 41. (Mus. Cuming.)

CHITON VIOLACEUS. *Chit. testâ subelongatâ, valvis subcordiformibus, planiusculis, medio acutis, undique subtiliter et creberrimè granulatis; intensè purpureo-rufâ; ligamento lato, corneo, fasciculis subtilissimis albidis vitreis utrinque valvas munito.*

THE VIOLET CHITON. Shell somewhat elongated, valves nearly cordiform, rather flattened, sharp in the middle, finely and very closely granulated throughout; intense purple-red; ligament broad, horny, with nine very fine brittle whitish fascicles on either side of the valves.

QUOY and GAIMARD, Voy. de l'Astrolabe, vol. iii. p. 403. pl. 73. f. 15 to 20.

Hab. New Zealand; Quoy and Gaimard.

The fascicles or tufts of glassy fibres appear so extremely brittle as to be difficult to preserve.

Species 42. (Fig. *a* and *b*, Mus. Cuming.)

CHITON LIMACIFORMIS. *Chit. testâ elongato-ovatâ, valvis convexis, terminalibus peculiariter concentricè granulatis, cæteris undique tenuissimè longitudinaliter sulcatis; viridi alboque multifariam variegatâ; ligamento corneo, arenaceo.*

THE SLUG-SHAPED CHITON. Sholl elongately ovate, valves convex, terminal valves peculiarly concentrically granulated, the rest very finely longitudinally grooved throughout; multifariously variegated with green and white; ligament horny, arenaceous.

SOWERBY, Pro. Zool. Soc., 1832, p. 26.

Hab. Inner Lobos Island, Peru, and Guacamayo, Central America (under stones at low water); Cuming.

The terminal valves of this species have a peculiar concentric arrangement of the sculpture; the green and white appear in greater or less proportion in different specimens; the ligament stripped of its arenaceous covering, as in fig. *b*, is perfectly transparent.

Species 43. (Mus. Cuming.)

CHITON INCISUS. *Chit. testâ valdè elongatâ, angustâ, valvis oblongo-clypeiformibus, anticâ terminali sexfariam carinatâ, carinis radiantibus, interstitiis alternatim obliquè sulcatis, cæteris, posticâ ad extremitatem umbonatâ, longitudinaliter tenuisulcatis; cinereâ aut viridescente, olivaceo-viridi variegatâ et marmoratâ; ligamento tenui corneo scabro, setis brevissimis obsito, utrinque latissimè producto, posticè fissurato.*

THE CUT CHITON. Shell considerably elongated, narrow, valves oblong-shield-shaped, anterior terminal valve six-keeled, keels radiating, interstices alternately obliquely grooved, the rest of the valves, anterior terminal umbonated to the extremity, longitudinally finely grooved; pale ash or greenish, variegated and marbled with olive green; ligament thin, horny, rough, beset with very short bristles, very widely produced on either side, slit at the posterior end.

SOWERBY, Pro. Zool. Soc., 1841, p. 61.

Hab. Daleguete, Island of Zebu, Philippines (under stones at low water); Cuming.

Chiefly remarkable on account of the thin widely expanded growth of the ligament, and its posterior slit.

Species 44. (Mus. Cuming.)

CHITON DIVERGENS. *Chit. testâ oblongo-ovatâ, valvis convexis, terminalibus rudè radiatim striatis, cæterarum areis lateralibus quoque radiatim striatis, striis fortibus, undulatis, bifurcatim divergentibus, areis centralibus minutissimè rugatis, rugis latera versus fortioribus; albidâ, viridi ad latera concinnè variegatâ; ligamento corneo, subtilissimè granuloso-coriaceo.*

THE DIVERGENT CHITON. Shell oblong-ovate, valves convex, the terminal rudely radiately striated, lateral areas of the rest also radiately striated, the striæ strong, waved, and bifurcately divergent, central areas very minutely wrinkled, wrinkles stronger towards the sides; whitish, prettily variegated at the sides with bright green; ligament horny, very finely granulously coriaceous.

Hab. New Holland; Jukes.

It is important to notice the rudely waved divergent structure of the raised striæ of the lateral areas, as there are one or two species from the same locality approximating in this respect.

Species 45. (Mus. Cuming.)

CHITON ALATUS. *Chit. testâ elongatâ, valvis anticè coarctatis, terminalibus et cæterarum areis lateralibus decussatim striatis, quasi granulatis, centralibus creberrimè elevato-striatis, striis acutis, subirregularibus, interstitiis excavatis; lutescente, viridi per marginem anticam arearum lateralium albiarticulato, umbonibus pallidè roseis; ligamento corneo, arenaceo, utrinque lato.*

THE WINGED CHITON. Shell elongated, valves contracted anteriorly, the terminal and lateral areas of the rest decussately striated, as if granulated, central areas very closely elevately striated, striæ sharp, somewhat irregular, interstices excavated; yellowish, very beautifully variegated in a dotted manner with bright green, the green articulated with white along the anterior edge of the lateral areas, umbones faintly tinged with pink; ligament horny, arenaceous, broad on either side.

SOWERBY, Pro. Zool. Soc., 1841, p. 61.

Hab. Islands of Siquijor and Zebu, Philippines (under stones at low water); Cuming.

Distinguished by its elongated form, the winged structure of the valves, its capacious ligament and prettily variegated style of painting.

Species 46. (Mus. Cuming.)

CHITON ACUTILIRATUS. *Chit. testâ subelongato-ovatâ, valvâ posticâ terminali ad extremitatem umbonatâ et retusâ, anticâ rotundatâ, ambabus cæterarum areisque lateralibus radiatim et decussatim granoso-striatis, centralibus acutè et creberrimè liratis, liris umbones versus convergentibus; albidâ, viridi per marginem anticam arearum lateralium albiarticulato, umbonibus roseo et purpureo tinctis; ligamento corneo, arenaceo, granis peramplis.*

THE SHARPLY-RIDGED CHITON. Shell somewhat elongately ovate, the posterior terminal valve umbonated and retuse at the extremity, anterior rounded, and lateral areas of the rest radiately and decussately granosely striated, central areas sharply and very closely ridged, ridges converging towards the umbones; whitish, variegated in a dotted manner with bright green, the green along the front edges of the lateral areas articulated with white, umboes tinged with pink and purple; ligament horny, arenaceous, the grains very large.

Hab. Cuba, Barbadoes.

The sculpture of this shell is, as it were, an exaggerated condition of that of the preceding species, and the painting, though coming from so widely remote a locality, is exactly similar; it may be at once distinguished, however, from the *C. alatus* by the retuse and umbonated structure of the posterior terminal valve.

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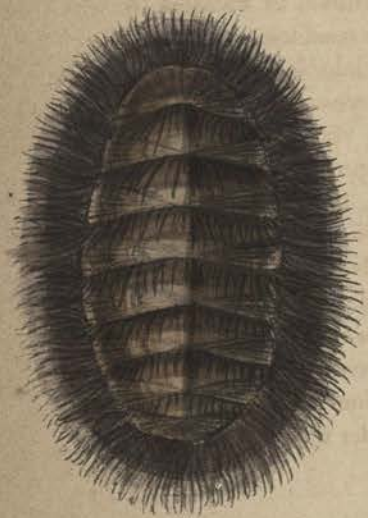

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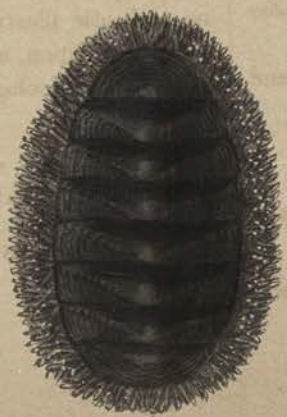

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CHITON.

PLATE IX.

Species 47. (Mus. Cuming.)

CHITON SPICULOSA. *Chit. testâ subelongato-ovatâ, valvis semilunaribus, undique rugosis; nigricante-fuscâ, ligamento corneo, spiculorum vitreorum cristis densis vividè olivaceis munito.*

THE SPICULOUS CHITON. Shell somewhat elongately ovate, valves semilunar, rough throughout; blackish brown; ligament horny, furnished with thick tufts of bright olive glassy spiculæ.

Hab. West Indies.

I am not aware that this beautiful species has been described; the dense tufts of spiculæ with which it is surrounded at the junction of the valves look like silk or spun glass.

Species 48. (Fig. *a*, and *b*. Mus. Cuming.)

CHITON SETIGER. *Chit. testâ ovatâ, valvâ anticâ terminali radiatim carinatâ, carinis subdistantibus, posticâ umbonatâ, cæterarum areis lateralibus lævibus aut transversim granulatis, margine anticâ carinatâ, centralibus aut lævibus aut obliquè granoso-rugulatis, præsertim versus latera; rubescente, interdum flavidâ, maculis nigris longitudinalibus variè pictâ; ligamento corneo, setis longiusculis palantibus irregularibus densè obsito.*

THE BRISTLY CHITON. Shell ovate, anterior terminal valve radiately keeled, keels rather distant, the posterior umbonated, lateral areas of the rest smooth or transversely granulated, anterior margin keeled, central areas either smooth or obliquely granosely wrinkled, especially towards the side; reddish, sometimes yellowish, variously painted with longitudinal black blotches; ligament horny, densely beset with rather long irregular straggling bristles.

KING, Zool. Journal, vol. v. p. 338.

Hab. Tierra del Fuego and Strait of Magalhaens; King.

Variety β. (Fig. 48. *b*.)

Testa viridis, maculis nigris sæpè undulatis, setis brevioribus numerosioribus.

Shell green, black spots often waved, bristles shorter and more numerous.

Chiton Fremblii, Broderip.

An eadem? *Chiton biramosus*, Quoy.

Hab. Valparaiso, Chili (found on one exposed rock only covered by a small sea-weed); Cuming.

These are very characteristic varieties, and evidently states of the same species; the sides of the valves are angled and appressed, and there is a peculiarity in the irregular straggling bristles, which beset the ligament.

Species 49. (Mus. Cuming.)

CHITON ACULEATUS. *Chit. testâ subelongato-ovatâ, valvis terminalibus, posticâ umbonatâ, cæterarum areisque lateralibus, granorum radiis irregularibus subdistantibus ornatis, granis solitariis, centralibus medio lævibus, utrinque densè obliquè rugatis; piceo-fuscâ; ligamento corneo, spinis numerosis, longitudine et crassitudine variantibus, obsito.*

THE PRICKLY CHITON. Shell somewhat elongately ovate, terminal valves, the posterior umbonated, and the lateral areas of the rest ornamented with rather distant irregular rays of solitary granules, central areas smooth in the middle, densely obliquely wrinkled on each side; pitch-brown, ligament horny, beset with numerous spines varying in length and thickness.

LINNÆUS, Syst. Nat. (12th edit.) pl. 1106.

Chiton tuberculiferus, Sowerby.

Chiton spiniferus, Frembly.

Hab. Chili (on exposed rocks); Frembly, Cuming.

There appears to me very little doubt but that the *C. spiniferus* of Frembly, though published as a distinct species by M. Deshayes in his new edition of Lamarck, is the old Linnæan *C. aculeatus* in fine conditon.

It is an abundant species and inhabits very exposed situations on rocks assailed by the constant buffetings of the waves; the shell is consequently very difficult to procure with its sculpture fairly developed. A figure of this species in Chemnitz, Conch. Cab. v. 10. pl. 173. f. 1692, is evidently drawn from a specimen mostly deprived of spines, with the surface of the valves, as is very commonly the case, completely eroded; the figure in the Encyclopédie Méthodique is merely a copy of this, so that no authentic illustration of the species appeared, in its natural condition, until the publication of Mr. Frembly's figure in the Zoological Journal under the name *C. spiniferus*.

Species 50. (Mus. Cuming.)

CHITON PERUVIANUS. *Chit. testâ ovatâ, valvis undique*

minutè granoso-striatis, granis solitariis; nigricante-viridi; ligamento corneo, pilis aterrimis densissimè obsito, pilis quoque per interstitia valvarum intrudentibus.

THE PERUVIAN CHITON. Shell ovate, valves minutely granosely striated throughout, grains solitary; blackish green; ligament horny, very thickly beset with jet black hairs, with hairs also passing out through the interstices between the valves.

LAMARCK, Anim. sans. vert. (Deshayes' edit.) vol. vii. p. 491.

Hab. Valparaiso, Chiloe, Iquiqui &c., Peru (under stones at low water, and attached to shells in sandy mud at a depth of about nine or ten fathoms); Cuming.

Easily distinguished by its profuse display of harsh vegetable-fibre-like hair which both crowds the ligament and passes out through the interstices between the valves.

Species 51. (Mus. Cuming.)

CHITON SPINOSUS. *Chit. testâ subelongato-ovatâ, valvis terminalibus cæterarum areisque lateralibus irregulariter granoso-rugosis, centralibus lævibus; purpureo-nigrâ, ligamento corneo, spinis solidis, erectis, aterrimis, longitudine variantibus, armato.*

THE SPINOUS CHITON. Shell somewhat elongately ovate, terminal valves, and lateral areas of the rest irregularly granosely roughened, central areas smooth; purple-black; ligament horny, armed with jet black erect solid spines of various lengths.

BRUGUIERE, Journ. d'Hist. Nat. vol. i. p. 25. pl. 2, f. 1, 2.

Hab. New Holland.

The spines of this fine species are quite peculiar; smooth and black as ebony, they are of a horn-like tubular structure, filled up with hard brownish calcareous matter.

Species 52. (Mus. Cuming.)

CHITON BREVISPINOSUS. *Chit. testâ subabbreviato-ovatâ, valvis terminalibus, posticâ umbonatâ, retusâ, cæterarum areisque lateralibus concentricè granulatis centralibus, umbonibus peculiariter appressis, medio lævibus, latera versus subtiliter granoso-rugulatis; intensè cæruleo-nigrâ; ligamento corneo, spinis solidis brevibus, aterrimis, apice albis, densissimè armato.*

THE SHORT-SPINED CHITON. Shell somewhat abbreviately ovate, terminal valves, the posterior umbonated and retuse, and lateral areas of the rest concentrically granulated, central areas, the umbones peculiarly appressed, smooth in the middle, finely granosely wrinkled towards the sides; intense blue-black; ligament horny, very thickly armed with short solid spines, jet black but white at the top.

SOWERBY, Mag. Nat. Hist., 1840. Conch. Illus. f. 136.

Hab. Island of Johanna, East Africa (under stones); Rev. W. V. Hennah.

Though abundantly distinguished from the *C. spinosus* in the form and sculpture of the valves, the posterior of which is abruptly umbonated, this species is more remarkably characterized by the spines being invariably white at the apex; they are shorter and more thickly crowded than in the preceeding species, and look exactly as if they had been singed at the top.

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CHITON.

PLATE X.

Species 53. (Mus. Cuming.)

CHITON FASCICULARIS. *Chit. testâ oblongo-ovatâ, valvis summitate lævibus, posticè subrostratis, utrinque creberrimè minutè granulatis; cinereo-luteâ, interdum strigis undulatis fuscis concentricè pictâ, summitate interdum nigrâ; ligamento setoso, spicularum cristis ornato.*

THE FASCICLED CHITON. Shell oblong-ovate, valves smooth along the summit, somewhat beaked posteriorly, very closely minutely granulated on each side; ashy yellow, sometimes concentrically painted with waved brown streaks, summit sometimes black; ligament bristly, ornamented with tufts of spiculæ.

LINNÆUS, Syst. Nat. (12th. edit.) p. 1106; (not of Chemnitz).

Chiton crinitus, Sowerby (not of Pennant).

Hab. Mediterranean and Channel Islands.

Naturalists are still somewhat divided in opinion as to whether the fasciculate *Chitons* of the seas of Europe are modifications of one and the same species, or whether they constitute two specifically distinct from each other. That Lamarck should have recorded them under one, after the manner of Linnæus, is not to be wondered at, considering his very limited knowledge of the genus; Philippi describes but one, very significantly adding "varietates vel potius species duæ occurrent", and details the characters of each precisely as I have observed them. Mr. Sowerby considers them as distinct species; he assigns the smaller, which is found the more abundantly on our own coast, and of which the granules are the larger, to the *C. fascicularis* of Linnæus, and that under consideration, chiefly inhabiting the Mediterranean and English Channel, to the *C. crinitus* of Pennant,

After a careful investigation of the subject I am led to conclude, with Mr. Sowerby, that the *C. fascicularis* and *crinitus* are distinct species, but I think he has erred in his identification of names. The larger species above described, inhabiting the Mediterranean and English Channel, and in England only the south coast, appears to be the original *C. fascicularis* of Linnæus, "from the coast of Barbary", whilst the smaller, which inhabits our coasts throughout and as far north as the Shetland Islands, is the *C. crinitus*, figured on an enlarged scale by Pennant. The *C. fascicularis* of Chemnitz which Mr. Sowerby considers "beyond doubt" identical with the Linnæan species, answers to neither of those in question; it refers rather to the *C. Zelandicus* of Quoy, represented in the following plate at Fig. 58, which may be regarded as the tropical analogue of our British *C. crinitus*.

The *C. fascicularis* is sometimes very prettily variegated with concentrice zigzag painting, sometimes pale, black and shining along the summit, and the surface is invariably more finely granulated than in the smaller *C. crinitus*.

Species 54. (Mus. Cuming.)

CHITON HIRUDINIFOMIS. *Chit. testâ subelongatâ, valvis medio lævibus, subrostratis, utrinque minutè et creberrimè granulatis; cæruleo-aterrimâ; ligamento lato, valvarum latera obducto, densè brevisetoso, spicularum cristis parvis ornato.*

THE LEACH-SHAPED CHITON. Shell somewhat elongated, valves smooth in the middle, minutely and closely granulated on each side; very dark blue-black; ligament broad, spread over the sides of the valves, very thickly set with short bristles, and ornamented with small tufts of spiculæ.

SOWERBY, Pro. Zool. Soc. 1832. p. 59.

Hab. Gallapagos Islands and coast of Peru (under stones at low water); Cuming. Korean Archipelago; Sir Edward Belcher.

There is very little variety of sculpture in the fasciculate species of *Chiton*; the present is perhaps most easily distinguished by its very dark blue-black colouring. The specimens, of which the localities are recorded above, are from such very remote parts of the world that I hesitated to think they could be of the same species; those from the Korean Archipelago, collected by Sir Edward Belcher during the voyage of the 'Samarang' are broader, stouter, and more convex than the Pacific specimens.

Species 55. (Pl. X and XI. Mus. Brit.)

CHITON SITKENSIS. *Chit. testâ elongato-oblongâ, valvis lævibus, clypeiformibus, posticè utrinque lobatis, posticâ terminali ad extremitatem umbonatâ, anticâ parvâ, margine incisuris senis subdistantibus notatâ; niveâ; pallio amplo, super testam omnino obducto, spicularum vitrearum asteriscis minutissimis pulcherrimè et densissimè obsito.*

THE SITKA CHITON. Shell elongately oblong, valves smooth, shield-shaped, lobed posteriorly on each side, the posterior terminal valve umbonated at the extremity, the anterior small, distinguished at the margin by half a dozen rather distant notches; snowy white; mantle large, spread entirely over the shell, very beautifully and thickly beset with minute stars of glassy spiculæ.

Hab. Sitka, New Archangel; Lady Katherine Douglas.

The mantle of this gigantic species of the *Amicula* type, is studded with minute stars of glassy spiculæ, which appear to be radiately displayed or closed at the will of the animal; when displayed their appearance reminds one of the star-like pattern in the mineral *Wavelite*. The valves being entirely enveloped by the mantle, which is impermeable to light, are destitute of colour, and, as in the rest of the group, are produced on each side posteriorly into lobes.

Species 56. (Mus. Cuming.)

CHITON PORPHYRETICUS. *Chit. testâ subelongato-ovatâ, valvis medio punctatis, utrinque verrucoso-scabris, costâ unicâ ad marginem arearum lateralium, valvâ terminali anticâ radiatim quinquecostatâ, posticâ parvâ, retusâ; cinereo-purpureâ, maculâ conspicuâ luteâ, margine nigro-punctatâ, medio vividè purpureâ per summitatem umbonalem utriusque valvæ; ligamento coriaceo, valvarum latera partim obducto, cristis parvis ornato.*

THE PURPLE CHITON. Shell somewhat elongately ovate, valves punctured in the middle, verrucosely rough on each side, with a single ridge along the edge of the lateral areas, anterior terminal valve radiately five-ribbed, posterior small, blunt; cinereous purple, with a conspicuous yellow spot, dotted with black at the edge and stained with bright purple in the middle, along the umbonal summit of each valve; ligament coriaceous, spreading partially over the sides of the valves, and furnished with small tufts.

Acanthochætes violaceus, Gray, Appendix to Dieffenbach's New Zealand; (not *C. violaceus*, Quoy).

Hab. New Zealand.

A beautifully painted species easily distinguished by the bright purple colouring of the umbonal summit, which appears constant in all the specimens I have seen; the punctures of the central portion of the valves also afford an unusual contrast with the rest of the surface which is raised in small warts.

Species 57. (Mus. Cuming.)

CHITON MONTICULARIS. *Chit. testâ elongato-ovatâ, valvis lævibus, medio carinatis, posticè umbonatis, utrinque latè biradiatim costatis; albâ; ligamento corneo, nigro, cristis brevibus munito, testam nisi umbones obducto.*

THE MONTICULAR CHITON. Shell elongately ovate, valves smooth, keeled down the middle, umbonated posteriorly, with two widely radiating ribs on each side; white; ligament horny, black, furnished with short tufts, spread over the shell except at the umbones.

QUOY and GAIMARD, Voy. de l'Astrolabe, Zool. vol. 3. p. 406. pl. 73. f. 30–35.

Hab. New Zealand.

The shell of this species is enveloped by a thin expansion of the mantle after the manner of the *C. amiculatus* and *Emersonianus*, a small compressed umbone only appearing through it in place of the raised heart-shaped shield. I do not see, with M. Deshayes, that this proves the inutility of the genus, *Chitonellus*; the valves are enframed within the ligament, and their arrangement is the same as in the typical form of *Chiton*.

One peculiarity of this species is, that the row of short tufts are situated about midway between the umbonal summit and lateral margin of the shell.

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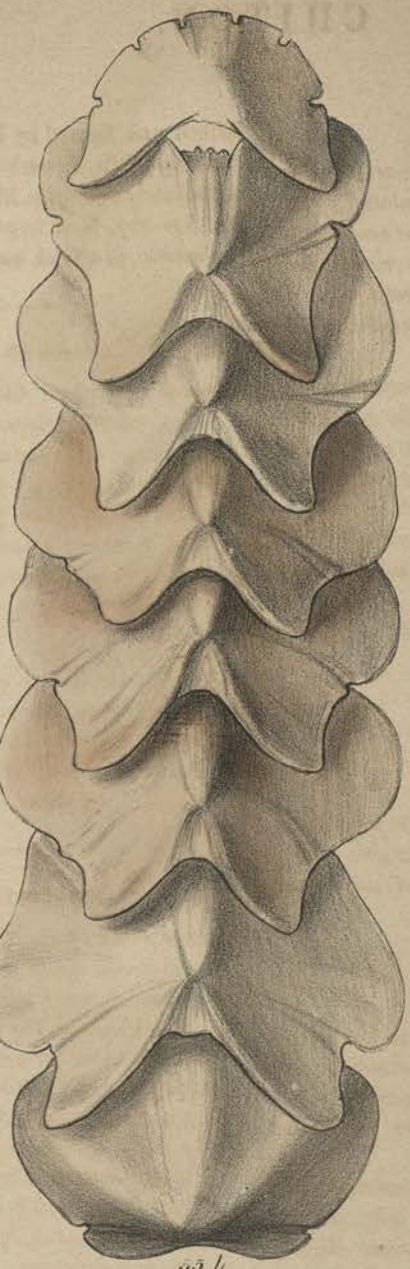

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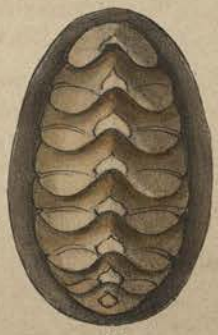


62

63

LIBRARY OF THE

CHITON.

PLATE XI.

Species 58. (Mus. Cuming.)

CHITON ZELANDICUS. *Chit. testâ subelongato-ovatâ, valvis medio lævibus, utrinque creberrimè granulatis; nigricante-fuscâ, lineâ conspicuâ luteâ utrinque summitatem umbonalem utriusque valvæ; ligamento corneo, latè expanso, valvarum latera partim obducto, setis perpaucis brevibus, spicularum vitrearum cristis densissimis viridibus munito.*

THE ZEALAND CHITON. Shell somewhat elongately ovate, valves smooth in the middle, very closely granulated on each side; blackish brown, with a conspicuous yellow line on either side the umbonal summit of each valve; ligament horny, widely expanded, partially spread over the sides of the valves, furnished with a few short bristles and a row of very dense tufts of blueish-green glassy spiculæ.

Quoy and GAIMARD, 'Voy de l' Astrolabe,' vol. iii. p. 400. pl. 72. f. 5–8.

Chiton fascicularis, Chemnitz.

Chitonellus Zelandicus, Gray.

Acanthochætes Hookeri, Gray.

Hab. New Zealand.

This very striking fasciculate species may be regarded as the tropical analogue of the *C. crinitus* of our own shores, presenting an almost similar distribution of colour and sculpture more highly developed.

Species 59. (Mus. Cuming.)

CHITON AMICULATUS. *Chit. testâ oblongo-ovatâ, valvis posticè utrinque rotundato-lobatis, medio emarginatis, umbonibus subrostratis; albâ; ligamento corneo testam tenuiter obducto, undique, nisi ad umbones, brevipiloso, setarum cristis parvis perpaucis asperso.*

THE CLOAK-CLAD CHITON. Shell oblong-ovate, valves posteriorly rotundately lobed on each side, emarginated in the middle, with the umbones slightly beaked; white; ligament horny, thinly spread over the shell, covered with short hair, except at the umbones, with a few small scattered tufts of bristles.

PALLAS, Nov. Act. Petrop. vol ii. p. 241. pl. 7. f. 26–30.

Chiton vestitus, Sowerby.

Hab. Arctic Ocean.

This is without doubt the original species of the amiculate tribe, inhabiting the shores of Northern Europe, described and figured by Pallas in the Transactions of the Academy of St. Petersburgh above referred to; the shell immediately following, hitherto assigned to this species by Mr. Sowerby, is of larger size and entirely enveloped by the mantle, of a thick coriaceous cellular structure.

Species 60. (Mus. Cuming.)

CHITON CHLAMYS. *Chit. testâ oblongo-ovatâ, valvis lævibus, posticè utrinque rotundato-lobatis; niveâ; pallio coriaceo, super testam omnino obducto.*

THE CLOAK CHITON. Shell oblong-ovate, valves smooth, rotundately lobed posteriorly on each side; snowy-white, mantle coriaceous, spread entirely over the shell.

Chiton amiculatus, Sowerby (not of Pallas) Tankerville Catalogue.

Hab. —— ?

The mantle of this species appears to be of a coarse cellular structure, the cells being mostly filled with flattened warts, as it were, of the same coriaceous substance. As shown in treating of the preceding species it is not the *C. amiculatus* of Pallas.

Species 61. (Mus. Cuming.)

CHITON TUNICATUS. *Chit. testâ oblongo-ovatâ, anticè subattenuatâ, valvis medio lirâ planâ latiusculâ notatis, utrinque superficialiter concentricè et radiatim sulcatis, et minutissimè punctato-reticulatis; ligamento corneo, latè expanso, valvarum latera obducto; undique nigrâ.*

THE TUNICATED CHITON. Shell oblong-ovate, somewhat attenuated anteriorly, valves with a rather broad flattened ridge along the middle, concentrically and radiately superficially grooved, and very minutely punctately reticulated on each side; ligament horny, widely expanded, spread over the sides of the valves; black throughout.

WOOD, General Conchology, p. 11. pl. 2. f. 1.

Hab. Sitka, New Archangel; Sir Edward Belcher.

Several specimens of this interesting species were taken alive by Capt. Sir Edward Belcher at the above-mentioned place during the voyage of the Sulphur.

Species 62. (Mus. Cuming.)

CHITON EMERSONIANUS. *Chit. testâ ovatâ, valvis lævibus, posticè utrinque rotundato-lobatis, utrâque scutellâ parvâ elevatâ cordiformi, concentricè creberrimè granoso-striatâ, medio notatâ, valvâ terminali anticâ superficialiter radiatim sulcatâ, posticâ parvâ, ad extremitatem subexcavatâ, retusâ; albâ; ligamento corneo, translucido, marginem versus arenaceo, testam, nisi areas parvas centrales, obducto.*

EMERSON'S CHITON. Shell ovate, valves smooth, rotundately lobed posteriorly on each side, with a small raised heart-shaped shield in the centre, which is very closely concentrically granosely striated; anterior terminal valve superficially radiately grooved, posterior small, slightly excavated at the extremity, blunt; white; ligament horny, transparent, arenaceous towards the margin, spread over all the shell except the small central raised shields.

GOUTHOUY; Boston, Journ. Nat. Hist. vol. ii. p. 83. pl. 3. f. 10.

Hab. Massachusetts Bay, United States (found in the stomachs of fishes); Gould.

The ligament in this curious species is spread over the valves as far as the small heart-shaped shields in the centre, like a thin layer of parchment; it is closely allied to the *C. amiculatus*, of Northern Europe, but may be distinguished by its broader growth, lighter colour, and absence of hair.

63

65 a

64

65 b

66

67 a

67 b

Sowerby del et lith

Reeve imp.

CHITON.

PLATE XII.

Species 63. (Mus. Cuming.)

CHITON CERASINUS. *Chit. testâ ovatâ, utrinque subattenuatâ, valvis undique minutissimè creberrimè puncturatis, areis lateralibus vix elevatis; fusco-rubente; ligamento corneo, translucido.*

THE CHERRY-COLOURED CHITON. Shell ovate, a little attenuated at each end, valves very minutely and closely punctured throughout, lateral areas scarcely raised; brownish red; ligament horny, transparent.

CHEMNITZ, Conch. Cab. vol. viii. p. 272. pl. 94. f. 796.

Hab. —— ?

The valves of this species are apparently smooth, but on examination with the lens, they will be found to be covered throughout with the minutest and closest possible punctures, as represented in Chemnitz's figure, published in 1785; since which time it does not appear to have been noticed.

Species 64. (Mus. Cuming.)

CHITON MARMOREUS. *Chit. testâ ovatâ, valvis terminalibus cæterarum areisque lateralibus radiatim granulatis, granulis solitariis, subirregularibus, centralibus convexis, lævibus umbonibus subappressis; lutescente-albâ, maculis virescentibus oblongis lautè pictâ; ligamento squamato-coriaceo, virescente-albâ, maculis grandibus virescentibus tessellato.*

THE MARBLE CHITON. Shell ovate, terminal valves and lateral areas of the rest radiately minutely granulated, granules solitary, somewhat irregular, central areas convex, smooth, umboes a little appressed; yellowish white, showily painted with oblong light green blotches; ligament squamately coriaceous, greenish-white, tessellated with large light green spots.

CHEMNITZ, Conch. Cab. vol. viii. p. 282. pl. 95. f. 803.

Hab. Savannah-le-mer, West Indies.

A pretty light-green painted shell, which might be confounded with the *C. marmoratus*, though amply distinguished both in form and sculpture.

Species 65. (Fig. *a* and *b*. Mus. Cuming.)

CHITON GIGAS. *Chit. testâ ovatâ, valvis crassiusculis et ponderosis, medio in juventute carinatis, posticè sinuatis, terminalibus cæterarum areisque lateralibus creberrimè tenuiliratis, liris irregularibus interstitiis minutissimè reticulatis, centralibus undique minutissimè reticulatis, valvis senectute erosis, lævibus; sordidè virescente-albâ, piceo-nigro hic illic plus minusve tinctâ et punctatâ; ligamento corneo, setis brevibus sparsim obsito.*

THE GREAT CHITON. Shell ovate, valves rather thick and ponderous, keeled along the middle when young, posteriorly sinuated, terminal valves and lateral areas of the rest very closely finely ridged, ridges irregular and very minutely reticulated in the interstices, central areas very minutely reticulated throughout, valves eroded with age, smooth; dull greenish white, more or less stained and dotted here and there with pitch black; ligament horny, sparingly beset with short bristles.

CHEMNITZ, Conch. Cab. vol. viii. p. 222. pl. 96. f. 819.

Hab. Cape of Good Hope; Rev. W. V. Hennah.

The elaborate sculpture of this species in its primitive growth, has not been hitherto noticed; it is only to be discerned in young specimens, and they are very rarely met with. In the beautiful little shell from Mr. Cuming's collection, represented at fig. *a*, the entire surface is most elaborately reticulated, but so minutely, that it almost requires the assistance of a lens to observe its complicated sculpture; the lateral areas are very closely ridged with the minute reticulated pattern still appearing in the interstices. As the shell advances in growth, the sculpture becomes gradually worn away by its exposure to the fury of the waves, and when it reaches the size of the specimen at fig. *b*, it is not often found in so good a state of preservation as there represented.

Species 66. (Mus. Cuming.)

CHITON SCARABÆUS. *Chit. testâ oblongo-ovatâ, valvis lævibus aut obscurè concentricè striatis, sub lente minutissimè et creberrimè puncturatis; fusco-nigrâ; ligamento squamato-coriaceo, virescente-albo, maculis nigris subdistantibus conspicuè tessellato.*

THE BEETLE CHITON. Shell oblong-ovate, valves smooth or obscurely concentrically striated, very minutely and closely punctured under the lens; brownish-black; ligament pale sea-green conspicuously tesselated with rather distant black spots.

Hab. —— ?

Easily recognised by the marked contrast between the colouring of the shell and the scales of the ligament; a character which I take to be permanent.

Species 67. Fig. *a* and *b*. Mus. Cuming.)

CHITON HINDSII. *Chit. testâ oblongo-ovatâ, anticè subattenuatâ, valvâ anticâ terminali nonafariam carinatâ, conspicuè granato-clathratâ, posticâ parvâ, umbonatâ, retusâ, cæteris undique diversimodo granato-clathratis, areis lateralibus non elevatis, margine antico tenuicarinato; olivaceo-viridi, interdum luteo-albido variegatâ; ligamento corneo, setis brevibus sparsim obsito.*

HIND'S CHITON. Shell oblong-ovate, a little attenuated anteriorly, anterior terminal valve nine-keeled, conspicuously granosely latticed, the posterior small, umbonated, retuse, the rest diversely granosely latticed throughout, lateral areas not raised, distinguished by a fine keel along the front margin; olive green, sometimes variegated with yellowish white; ligament horny, sparingly beset with short bristles.

SOWERBY, MSS. (Mr. Cuming's cabinet).

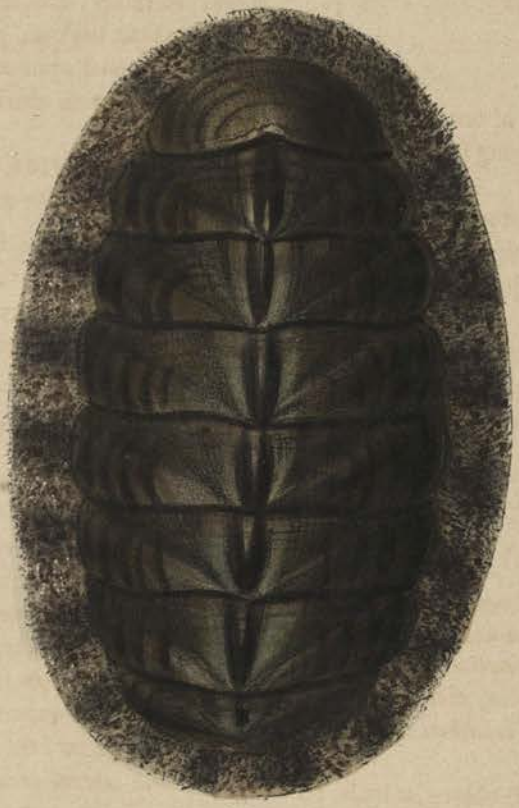
Hab. —— ?

This very interesting species, the valves of which have somewhat the form of those of *C. setiger*, is distinguished by a most elaborate close-grained latticed style of sculpture, perfectly distinct from any that I have yet met with. Mr. Sowerby's name exists only in manuscript, but I have much pleasure in giving publicity to it, for the sake of honouring one of the most intelligent conchological travellers recorded in the history of our scientific Expeditions.

68

69 a

69 b



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Sowerby del. et lith.

Reeve imp.

CHITON.

PLATE XIII.

Species 68. (Mus. Cuming.)

CHITON QUOYI. *Chit. testâ oblongâ, valvis undique tenuissimè et creberrimè liratis, umbonibus subprominulis, lævibus; aut viridi, aut nigricante-olivaceâ, aut rubidâ; ligamento granoso-coriaceo.*

QUOY'S CHITON. Shell oblong, valves very finely and closely ridged throughout, umboes rather prominent, smooth; green, or blackish olive, or dull coppery red; ligament granosely coriaceous.

DESHAYES, Anim. sans vert. vol. vii. p. 509.

Chiton viridis, Quoy.

Hab. New Zealand.

The colour of this species appears to be of one uniform tint, without any indication of pattern, varying from green to dull red.

It has been dedicated to the zealous naturalist of the ship 'Astrolabe' by M. Deshayes in consequence of the name *viridis* given to it by M. Quoy having already occured in Chemnitz, Conch. Cab. vol. viii. pl. 94. f. 794. (not vol. x. pl. 173. f. 1689.); this is scarcely allowable, however, as the word is only used in the diagnose, not as a specific name, "*Chiton extus viridis intus candidus*", a variety probably of the *C. Chiloensis*.

Species 69. (Mus. Cuming.)

CHITON PUNCTICULATUS. *Chit. testâ oblongâ, anticè subattenuatâ, valvis subrotundatis, lævibus aut concentricè striatis, peculiariter puncticulatis, præsertim ad latera, puncticulis irregularibus; subdistantibus, albidâ, sanguineo lautè undatâ, ad latera fuscâ, interdum omnino nigrâ; ligamento corneo.*

THE FINELY PUNCTURED CHITON. Shell oblong, a little attenuated anteriorly, valves somewhat rounded, smooth or concentrically striated, peculiarly punctured, especially at the sides, punctures irregular, somewhat distant; whitish, showily waved with blood-red, brown at the sides, sometimes entirely black; ligament horny.

Hab. ——?

It will be seen by the examples of this species figured how much it varies in colour; the punctured character which I have selected to distinguish it is constant, though generally more or less obscured by erosion.

Species 70. (Mus. Cuming.)

CHITON PICEUS. *Chit. testâ ovatâ, crassiusculâ, valvis concentricè planiliratis, lirarum interstitis elevato-striatis et interdum granatis, umbonibus subrostratis; piceo-nigrâ, virescente utrinque summitatem umbonalem; ligamento corneo, processibus brevibus calcareis setæformibus albidis profusè obsito.*

THE PITCH CHITON. Shell ovate, rather thick, valves concentrically flatly ridged, interstices between the ridges elevately striated and sometimes grained, umboes a little beaked; pitch black, greenish on each side the umbonal summit; ligament horny, profusely beset with whitish short calcareous bristle-like processes.

GMELIN, Syst. Nat. p. 3204.

Hab. New Holland (on the rocks); Cunningham.

This I believe to be the true *C. piceus*; it is a thick ponderous, shell, of which the ligament when in a good state of preservation, is covered with calcareous bristle-like processes as in *C. spiniger*, but much finer.

Species 71. (Mus. Cuming.)

CHITON FULGETRUM. *Chit. testâ ovatâ, anticè subattenuatâ, undique, sub lente, minutissimè et creberrimè decussatim puncturatâ, valvis terminalibus cæterarum areisque lateralibus subobscurè radiatim sulcatis; rubido-fuscâ, undulis luteis nigrisque longitudinalibus peculiariter pictâ; ligamento-corneo.*

THE LIGHTENING CHITON. Shell ovate, a little attenuated anteriorly, very minutely and closely decussately punctured, under the lens, throughout, terminal valves and lateral areas of the rest somewhat obscurely radiately grooved; reddish-brown, peculiarly painted with longitudinal yellow and black zigzag waves; ligament horny.

Hab. ——?

This species, it will be observed, is distinguished by a very peculiar style of painting, which in the absence of sculpture, may be regarded of specific importance.

Species 72. (Mus. Cuming.)

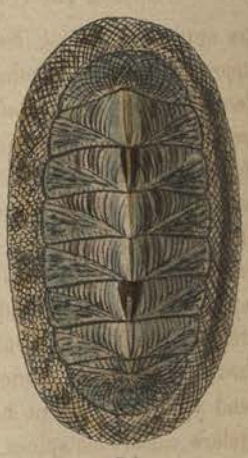
CHITON LINTER. *Chit. testâ oblongâ, anticè subattenuatâ, valvis medio tumidis, undique lævibus, aut minutissimè*

48 c

74

48 d

75



76

77 b

CHITON.

PLATE XIV.

Fig. 48. *c* and *d* (Mus. Cuming.)

CHITON SETIGER. Figured inadvertently under an impression that they were distinct species.

Species 74. (Mus. Cuming.)

CHITON PETHOLATUS. *Chit. testâ ovatâ, valvis, terminali posticâ minimâ, striis elevatis, subretusis, creberrimis, undulatis, undique concentricè rugatis; nigrâ, virescente-albo variegatâ, maculâ oblongâ regulari utrinque summitatem umbonalem; ligamento corneo, setis brevibus obsito.*

THE SERPENT'S SKIN CHITON. Shell ovate, valves concentrically wrinkled throughout with very close, waved, rather blunt, raised striæ; black, variegated with pale greenish white, having a regular oblong spot down each side the umbonal summit; ligament horny, beset with short bristles.

SOWERBY, Mag. Nat. Hist. 1840, Conch. Illus. f. 59, 64, 65.
Hab ——?

Allied to *C. setiger* but more highly sculptured; the keels are wanting on the terminal valves, and the style of painting is different.

Species 75. (Mus. Cuming.)

CHITON SPINIGER. *Chit. testâ oblongo-ovatâ, valvis subappressis, undique rugulatis et granatis, granarum interstitiis arearum terminalium et lateralium plus minusve peculiariter puncturatis; olivaceo flavidoque variâ; ligamento corneo, latiusculo, spinis calcareis flavidis, nunc brevibus subcylindraceis, nunc lanceolatis arcuatis, densissimè obsito.*

THE THORNY CHITON. Shell oblong-ovate, valves a little appressed, wrinkled and granulated throughout, interstices between the grains of the terminal and lateral areas more or less punctured; variegated with olive and yellow; ligament horny, very thickly beset with yellow calcareous spines, sometimes short and somewhat cylindrical, sometimes lanceolate and curved.

SOWERBY, Mag. Nat. Hist. 1840, and Pro. Zool. Soc. 1841.
Hab. Philippine Islands; Cuming.

It is important to notice that the terminal and lateral areas of this species are curiously punctured; a character which with the assistance of a lens may be detected without difficulty. The singular calcareous processes of the ligament, for they are hardly to be called spines, defer materially in the extent of their development; in one variety in Mr. Cuming's possession they are of a curved lanceolate form, like miniature *Dentalia*.

Species 76. (Mus. Cuming.)

CHITON OCCIDENTALIS. *Chit testâ oblongo-ovatâ, valvis, posticâ terminali umbonatâ et retusâ, undique granatis, granis solitariis, conspicuis; valvarum lateribus olivaceis; medio albido, maculâ fuscâ oblongâ latiusculâ per summitatem umbonalem; ligamento setis calcareis minutis densissimè obsito.*

THE WESTERN CHITON. Shell oblong-ovate, valves, the posterior terminal one umbonated and retuse, grained throughout, the grains solitary and conspicuous; sides of the valves olive, middle whitish with a rather broad oblong brown blotch along the umbonal summit; ligament very thickly crowded with minute calcareous bristles.

Hab. Savannah-le-mer, West Indies.

Were it not for the unusual occurrence of the same mollusk inhabiting the West Indies and the Philippine Islands, I should have been tempted to regard the species under consideration as a remarkable modification of the *C. spiniger*; there being a great similarity in colour and sculpture, whilst the calcareous processes of the ligament are here represented by nearly the same structure on the minutest possible scale. There is, however, a character in the *C. spiniger*, namely, the punctures of the terminal and lateral areas of which I find no trace in the species before me.

Species 77. (Fig. *a* and *b* Mus. Cuming.)

CHITON ASSIMILIS. *Chit. testâ oblongo-ovatâ, valvis terminalibus decussatim granoso-radiatis, cæteris areis lateralibus margine postico serratis, radiatim liratis, liris callositatibus oblongis, obliquè interruptis, areis centralibus vertice lævibus, utrinque confertim tenuiliratis; olivaceo-cinereâ, hic illic saturatiore variâ; ligamento squamato-coriaceo, maculis grandibus olivaceis tessellato.*

THE ASSIMILATING CHITON. Shell oblong-ovate, terminal valves decussately granosely rayed, lateral

areas of the rest serrated along the posterior edge, radiately ridged, obliquely interrupted with oblong callosities, central areas smooth at the top, closely finely ridged on each side; olive-ash, variegated here and there of a darker tint; ligament squamately coriaceous, tessellated with large olive spots.

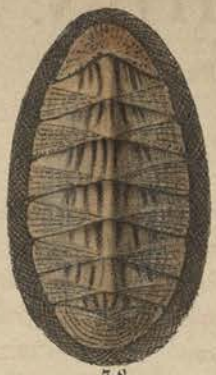
Variety β. (Fig. 77 *b*.)

Testa omnino nitidè olivaceo-nigricans.

Shell altogether shining olive-black.

Hab. West Indies.

The difference between this and the *C. squamosus*, is only to be detected by observing that the longitudinal ridges of the central areas are finer, closer, and not curved; each species has its dark bronze variety, and this variation of sculpture though apparently trifling is constant in both.



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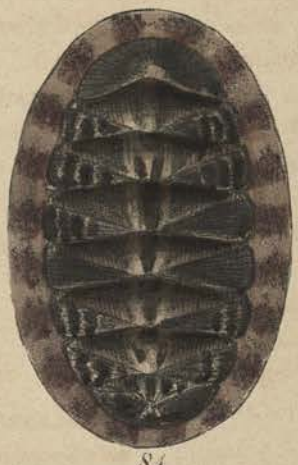

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85a

85b, c

86

Sowerby. del. et lith.

(*Specimens slightly magnified*)

Reeve imp

CHITON.

PLATE XV.

(Figures slightly magnified.)

Species 78. (Mus. Cuming.)

CHITON CONTRACTUS. *Chit. testâ oblongâ, ad extremitates, præcipuè anticâ, peculiariter contractâ, valvis terminalibus cæterarum areisque lateralibus concentricè granulatis, granulis solitariis, centralibus minutissimè et creberrimè liratis, liris latera versus arcuatis, conspicuis, medium versus tenuioribus et obliquè decussatim striatis; spadiceo-albâ, fusco medio flammatâ; ligamento granoso-coriaceo, fusco.*

THE CONTRACTED CHITON. Shell oblong, peculiarly contracted at the extremities, especially the anterior, terminal valves and lateral areas of the rest concentrically granulated, granules solitary, central areas very minutely and closely ridged, ridges curved and conspicuous towards the sides, finer towards the middle and decussated with oblique striæ; light bay, flamed in the middle with brown; ligament granosely coriaceous, dark brown.

Hab. New Zealand.

The chief peculiarity in this species consists in the attenuated contraction of the extremities; the sculpture is most elaborate, and the colouring unique.

Species 79. (Mus. Cuming.)

CHITON PICTUS. *Chit testâ ovatâ, valvis, posticâ terminali truncatâ, rugis brevibus acutè undulatis, interstitiis puncturatis, ornatis, arearum lateralium margine antico carinato; roseo-albidâ, maculis viridibus coccineisque lautè pictâ; ligamento corneo, translucido.*

THE PAINTED CHITON. Shell ovate, valves, the posterior terminal truncated, ornamented with short sharply undulated wrinkles, the interstices between which are punctured, anterior edge of the lateral areas keeled; pinkish white, showily painted with green and scarlet spots; ligament horny, transparent.

Hab. Raines' Island, Torres Straits; Capt. Ince.

Another striking species, allied to *C. truncatus*, distinguished by its sculpture and more flattened growth.

Species 80. (Mus. Cuming.)

CHITON JANEIRENSIS. *Chit. testâ oblongo-ovatâ, valvis, areis lateralibus conspicuè elevatis, undique granoso-liratis, liris arearum centralium valdè tenuioribus; sordidè luteo-fuscâ, maculâ trigonâ albicante per summitatem umbonalem utriusque valvæ; ligamento corneo.*

THE JANEIRO CHITON. Shell oblong-ovate, valves, the lateral areas being conspicuously elevated, granosely ridged throughout, ridges of the central areas much the finer; dull yellowish brown, with a triangular whitish spot along the umbonal summit of each valve; ligament horny.

GRAY, Spicilegia Zoologica, p. 6. f. 8.

Hab. Rio Janeiro.

The lateral areas are more than usually elevated in this species.

Species 81. (Mus. Cuming.)

CHITON SCABRICULUS. *Chit. testâ ovatâ, planiusculâ, valvis undique scabrè granoso-lineatis; lineis arearum centralium tenuioribus; cinereâ et nigricante-viridi, albido variegatâ; ligamento corneo, pilis brevibus perpaucis munito.*

THE ROUGH CHITON. Shell ovate, rather flattened, valves roughly granosely-lineated throughout, lines of the central areas the finer; ash or blackish green, variegated with white; ligament horny, furnished with a few short hairs.

SOWERBY, Pro. Zool. Soc. 1832. p. 28.

Hab. Guacomayo and Puerto Portrero, Central America (under stones); Cuming.

The light variegated colouring appears in the form of curved sharply zigzag flames in the specimen here figured.

Species 82. (Mus. Cuming.)

CHITON COLUMBIENSIS. *Chit. testâ ovatâ, depressiusculâ, valvis terminalibus cæterarum areisque lateralibus granulis asperis solitaris irregulariter aspersis, arearum lateralium margine postico denticulato, areis centralibus tenuissimè granoso-striatis; sordidè rubente-fuscâ, denticulis albis; ligamento corneo, translucido.*

THE COLUMBIAN CHITON. Shell ovate, rather depressed, terminal valves and lateral areas of the rest irregularly

sprinkled with sharp solitary granules, posterior edge of the lateral areas denticulated, central areas very finely granosely striated; dull reddish-brown, denticles white, ligament horny, transparent.

SOWERBY, Pro. Zool. Soc. 1832, p. 58.

Hab. Bay of Panama.

The sculpture of this species is very similar to that of *C. luridus*; it may, however, be readily distinguished by the denticulated posterior edge of the lateral areas.

Species 83. (Mus. Cuming.)

CHITON RETICULATUS *Chit. testâ oblongo-ovatâ, valvis terminalibus cæterarum areisque lateralibus radiatim liratis, centralibus rudè et creberrimè reticulatis; sordidè fuscâ; ligamento corneo, rugoso.*

THE RETICULATED CHITON. Shell oblong-ovate, terminal valves and lateral areas of the rest radiately ridged, central areas rudely and closely reticulated; dull brown; ligament horny, rough.

Chiton textilis, var. Sowerby, Conch. Illus. f. 61.

Hab. West Indies.

The lateral areas are rather more than usually elevated in this species, whilst the central areas are peculiarly reticulated; it has no affinity whatever with *C. textilis*.

Species 84. (Mus. Cuming.)

CHITON PELLIS-SERPENTIS. *Chit. testâ ovatâ, valdè convexâ, valvis subrotundatis, terminalibus, posticâ umbonatâ, radiatim granatis, cæterarum areis lateralibus triradiatim granatis, granis grandibus, solitariis, areis centralibus tenuissimè sulcatis; albidâ, cæruleo-viridi variegatâ, maculâ trigonâ nigricante per summitatem umbonalem utriusque valvæ; ligamento squamato-coriaceo, squamis grandibus, albicante cæruleo-viridique tessellato.*

THE SNAKE'S SKIN CHITON. Shell ovate, very convex, valves somewhat rounded, the terminal, posterior umbonated, radiately grained, lateral areas of the rest with three rays of grains, the grains large and solitary, central areas very finely grooved; whitish, variegated with dark blueish green or verdigris colour, with a triangular blackish spot on the umbonal eminence of each valve; ligament squamately coriaceous, scales large, whitish, tessellated with blueish-green.

QUOY and GAIMARD, Voy. de l'Astrolabe, Zool. v. 3. p. 381. pl. 74. f. 17 to 22.

Hab. New Zealand.

Distinguished in all respects from any other species but especially by the bold solitary character of the grains.

Species 85. (Mus. Cuming.)

CHITON LURIDUS. *Chit. testâ ovatâ, depressiusculâ, valvis terminalibus cæterarum areisque lateralibus granulatis, granulis irregularibus stipatis, areis centralibus subtiliter granoso-striatis; sordidè fuscâ aut rubente; ligamento corneo, rugoso.*

THE LURID CHITON. Shell ovate, rather depressed, terminal valves and lateral areas of the rest granulated, granules irregular, crowded, central areas finely granosely striated; dull brown or reddish; ligament horny, rough.

SOWERBY, Pro. Zool. Soc. 1832.

Hab. Santa Elena, West Columbia (found attached to stones at a depth of five fathoms); Cuming.

Mostly delicately granulated throughout, the granules on the terminal and lateral areas being crowded miscellaneously, whilst those on the central areas are arranged in longitudinal lines.

Species 86. (Mus. Cuming.)

CHITON GRANIFERUS. *Chit. testâ ovatâ, convexiusculâ, valvis terminalibus cæterarum lateribus granatis, umbonibus subrostratis, lævibus, anticè utrinque subtiliter sulcatis; rubente, nigro maculatâ; ligamento corneo, translucido.*

THE GRAINED CHITON. Shell ovate, rather convex, terminal valves and sides of the rest grained, umbones somewhat beaked, smooth, anteriorly finely grooved on each side; reddish, spotted with black; ligament horny, transparent.

SOWERBY, Pro. Zool. Soc. 1832. p. 104.

Hab. Conception, Chili (a single specimen found attached to a *Mytilus* at the depth of nine fathoms), Cuming.

This species correctly described in the Proceedings of the Zool. Soc. appears to have been confounded in Mr. Sowerby's 'Conchological Illustrations' with the *C. Grayi*.

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LIBRARY OF THE BOMBAY BR. OF THE ROYAL ASIATIC SOCIETY

Sowerby, del. et lith. *(Specimens slightly magnified)* Reeve imp.

CHITON.

PLATE XVI.

(Figures slightly magnified.)

Species 87. (Fig 87 and 90. Mus. Cuming.)

CHITON UNDULATUS. *Chit. testâ ovatâ, valvis transversè subangustis, medio rostratis, lævibus, areis lateralibus interdum obscurè liratis; albidâ aut rubido-lutescente, valvis lineis concentricis viridibus conspicuè ornatis, ligamento corneo, subarenaceo.*

THE WAVED CHITON. Shell ovate, valves transversely rather narrow, beaked in the middle, smooth, lateral areas sometimes obscurely ridged; whitish or reddish yellow, valves conspicuously ornamented with green concentric lines, ligament horny, subarenaceous.

QUOY and GAIMARD, Zool. Voy. de l'Astrolabe, v. 3. p. 393. pl. 75.

Extremely variable in respect to colour, but the general design of the painting is characterised by a waved concentric arrangement, mostly green.

Species 88. (Mus. Cuming.)

CHITON PERTUSUS. *Chit. testâ oblongo-ovatâ, valvis medio elevatis, undique creberrimè sulcatis, liris arearum centralium tenuibus, umbones versus convergentibus, sulcis interstitialibus pertusis, valvarum margine postico serrato; rubidâ, punctis paucis minutis albis aspersâ; ligamento corneo, setis brevibus perpaucis obsito.*

THE PRICKED CHITON. Shell oblong-ovate, valves elevated in the middle, very closely grooved throughout, ridges of the central areas thin, converging towards the umbones, interstitial grooves pricked, posterior edge of the valves serrated; dark red, sprinkled with a few minute white dots; ligament horny, very sparingly beset with short bristles.

Hab. Simon's Bay, Cape of Good Hope; W. V. Hennah.

The pricked interstices between the close-set ridges which constitute one of the distinguishing features of this species are scarcely discernible without the lens.

Species 89. (Mus. Cuming.)

CHITON CALIFORNICUS. *Chit. testâ oblongo-ovatâ, valvis medio subrostratis, undique subtilissimè corrugato-crenulatis, terminalibus cæterarum areisque lateralibus laticostatis; fusco-viridi, ligamento corneo, pilis setisque densè obsito.*

THE CALIFORNIAN CHITON. Shell oblong ovate, valves somewhat beaked in the middle, very finely corrugately granulated throughout, terminal valves and lateral areas of the rest broad-ribbed; brownish green, ligament horny, thickly beset with hairs and bristles.

NUTTALL, MSS.

Hab. California.

Distinguished by its broad though somewhat obscure ribs.

Species 91. (Mus. Cuming.)

CHITON TEXTILIS. *Chit. testâ oblongo-ovatâ planiusculâ, valvis terminalibus cæterarum areisque lateralibus radiatim liratis, liris planatis, sulcis concentricis perpaucis decussatis, areis centralibus minutissimè et pulcherrimè, cellulosis cellulis subprofundè excavatis; sordidè albâ; ligamento minutè granoso-coriaceo, quoque sordidè albo.*

THE TEXTILE CHITON. Shell oblong ovate, rather flattened, terminal valves and lateral areas of the rest radiately ridged, ridges flattened, crossed with a few concentric grooves, central areas very minutely and beautifully celluled, cellules rather deeply excavated; dead white; ligament minutely granosely coriaceous, also dead white.

GRAY, Spicilegia Zoologica, p. 5. pl. 6. f. 20.

Hab. Cape of Good Hope (under stones at low water).

Of an uniform dead white, remarkably distinguished by the very minute elaborate cellular honey-comb sculpture of the central areas.

Species 92. (Mus. Cuming.)

CHITON PALLIDUS. *Chit. testâ oblongo-ovatâ, valvis undique lævibus; sordidè albâ; ligamento corneo, arenaceo, fusco.*

THE PALE CHITON. Shell oblong-ovate, valves smooth throughout; dead white; ligament horny, arenaceous, brown.

Hab. ——?

Perfectly distinguished from the preceding species by its smooth surface and dark brown ligament.

Species 93. (Mus. Cuming.)

CHITON TRUNCATUS. *Chit. testâ subelongato-ovatâ, valvis convexis, posticâ terminali fortiter umbonatâ et truncatâ, subasperis, sulcis superficiariis undulatis concentricè incisis; luteo-albicante, viridi pulcherrimè variegatâ, summitate umbonali plus minusve roseâ; ligamento corneo, translucido.*

THE TRUNCATED CHITON. Shell somewhat elongately ovate, valves convex, the posterior terminal being strongly umbonated and truncated, little rough, concentrically carved with superficial waved grooves; yellowish-white, very beautifully variegated with green, umbonal summit, more or less rose; ligament horny, transparent.

SOWERBY, Pro. Zool. Soc., 1841. p. 61.

Hab. Catbalonga, Island of Samar, Philippines (under stones at low water); Cuming.

An extremely pretty species, having somewhat the appearance of the *C. crenulatus*, from which it may be distinguished by its different style of sculpture and prominent umbonated growth of the posterior terminal valve.

Species 94. (Mus. Cuming.)

CHITON INCII. *Chit. testâ oblongo-ovatâ, valvis terminalibus, posticâ parvâ declivi, cæterarum areis lateralibus punctis perpaucis radiatis, centralibus sulcis longitudinaliter arcuatis et undulatis exsculptis, summitate lævibus; lutescente, roseo nigricante-viridi viridique variegatâ; ligamento corneo, subarenaceo.*

INCE'S CHITON. Shell oblong-ovate, terminal valves, the posterior being small and slanting, and the lateral areas of the rest radiated with a few punctures, central areas engraved with longitudinally curved grooves, smooth along the summit; yellowish, variegated with pink, blackish green and light green; ligament horny, little arenaceous.

Hab. Raines' Island, Torres Straits (under stones at low water); Capt. Ince.

Partaking in colour and more or less in other respects of the character of the preceding species, from which it differs in the absence of the umbonated truncated growth of the posterior terminal valve, whilst the sculpture, though approximating in design, is distinct, and the lateral areas are slightly punctured.

Species 95. (Mus. Cuming.)

CHITON CONCENTRICUS. *Chit. testâ oblongo-ovatâ, umbonibus subrostratis, valvis terminalibus cæterarum areisque lateralibus concentricè sulcatis, centralibus longitudinaliter liratis, liris subdistantibus interstitiis excavatis, valvâ terminali posticâ umbonatâ, areâ parvâ trigonâ planâ medio notatâ; æruginosâ; ligamento, granoso-coriaceo, fusco tessellato.*

THE CONCENTRIC CHITON. Shell oblong-ovate, umbones somewhat beaked, terminal valves and lateral areas of the rest concentrically grooved, central areas longitudinally ridged, ridges rather distant, interstices hollowed, posterior terminal valve umbonated and distinguished in the middle by a small smooth triangular shield; bronzed; ligament granosely coriaceous, tessellated with brown.

Hab. New Zealand; Earl.

The arrangement of the sculpture of the terminal and lateral areas, present a rare exception, in this species, to the general rule, the grooves being transversely concentric instead of longitudinally radiate.

Fig. 96. (Mus. Cuming.)

The shell here represented proves to be merely a dark variety of the *C. Siculus*.

For Species 96, see Pl. XVIII.

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Sowerby, del. et lith.

Specimens slightly magnified.

Reeve, imp.

CHITON.

PLATE XVII.

(Figures slightly magnified.)

Species 97. (Mus. Cuming.)

CHITON PRODUCTUS. *Chit. testâ elongato-ovatâ, valvis terminalibus cæterarum areisque lateralibus concentricè undulatim striatis, centralibus longitudinaliter sulcatis; pallidè cinereo-albâ, valvarum margine postico rufo-punctato; ligamento corneo.*

THE LENGTHENED CHITON. Shell elongately ovate, terminal valves and lateral areas of the rest concentrically undulately striated, central areas longitudinally grooved; pale ash-white, posterior edge of the valves dotted with red; ligament horny.

Hab. ——?

The posterior terminal valve of this elongated species is unusually large.

Species 98. (Mus. Cuming.)

CHITON SANGUINEUS. *Chit. testâ elongato-ovatâ, valvis terminalibus cæterarum areisque lateralibus concentricè undulatim striatis, centralibus longitudinaliter crebri-striatis; cinereâ, viridi-fusco variegatâ, maculâ grandi sanguineâ utrinque umbonem utriusque valvæ conspicuè tinctis; ligamento corneo, arenaceo.*

THE BLOOD-STAINED CHITON. Shell elongately ovate, terminal valves and lateral areas of the rest concentrically undulately striated, central areas very closely longitudinally striated; ash-colour variegated with greenish brown, with a large blood-red stain on each side the umbo of each valve; ligament horny.

Hab. St. Vincents, West Indies; Guilding.

The red blotches of painting which characterize this species are constant in all the examples I have seen; in sculpture it is allied to *C. limaciformis*

Species 99. (Mus. Cuming.)

CHITON RETUSUS. *Chit. testâ oblongo-ovatâ, valvis terminalibus, posticâ peculiariter productâ et retusâ, cæterarum areisque lateralibus turgidis elevatis radiatim sulcatis, sulcis distantibus, centralibus longitudinaliter liratis, liris posticè convergentibus; pallescente, fusco strigatâ; ligamento corneo.*

THE BLUNT CHITON. Shell oblong-ovate, terminal valves, of which the posterior is peculiarly produced and blunted, and lateral areas of the rest swollen, elevated, and radiately grooved, grooves rather distant, central areas longitudinally ridged, ridges converging posteriorly; pale, streaked with brown; ligament horny.

SOWERBY, Pro. Zool. Soc. 1832., p. 28.

Hab. Guacomayo and Puerto Portrero, Central America (under stones on the shore); Cuming.

Distinguished from all other species by the curious blunted structure of the posterior terminal valve.

Species 100. (Mus. Cuming.)

CHITON SETOSUS. *Chit. testâ oblongo-ovatâ, valvis utrinque laticostatis, medio lævibus; virescente-cinereâ, rufo viridique lautè variegatâ; ligamento corneo, setis obsito.*

THE BRISTLY CHITON. Shell oblong-ovate, valves broadly ribbed on each side, smooth in the middle; greenish ash-colour, showily variegated with red and green, ligament horny, beset with bristles.

SOWERBY, Pro. Zool. Soc., 1832.

Hab. Guacomayo, Central America (on exposed rocks); Cuming.

The lateral areas are scarcely distinguished, except by a pair of ribs, the interstices on either side of which are broadly grooved.

Species 101. (Mus. Cuming.)

CHITON CÆLATUS. *Chit. testâ oblongo-ovatâ, anticè subattenuatâ, valvis terminalibus, posticâ parvâ, declivi, cæterarum areisque lateralibus laticostatis, laminis creberrimis undulatis nitidè cælatis, centralibus minutissimè reticulatis; pulcherrimè viridi roseoque ornatâ; ligamento corneo, hic illic setoso.*

THE CURVED CHITON. Shell oblong-ovate, somewhat attenuated anteriorly, terminal valves, the posterior of which is small and slanting, and lateral areas of the rest broad-ribbed and neatly curved with close-set waved laminæ, central areas very minutely reticulated; beautifully ornamented with green and pink; ligament horny, here and there bristly.

Hab. New Zealand; Earl.

Care must be taken not to confound this beautiful species with the *C. setosus.*

Species 102. (Mus. Cuming.)

CHITON USTULATUS. *Chit. testâ elongato-ovatâ, valvis terminalibus cæterarum areisque lateralibus radiatim liratis, liris corrugatis, hic illic granatis et bifurcatis, centralibus minutissimè reticulatis; ustulato-fuscâ; ligamento granoso-coriaceo.*

THE SCORCHED CHITON. Shell elongately ovate, terminal valves and lateral areas of the rest radiately ridged, ridges wrinkled, here and there grained and bifurcated, central areas very minutely reticulated; burnt brown; ligament granosely coriaceous.

Hab. Australia; Jukes.

A very distinct species, whether as respects form, colour, or sculpture.

Species 103. (Mus. Cuming.)

CHITON ATRATUS. *Chit. testâ oblongo-ovatâ, valvis lævibus, terminalibus, posticâ truncatâ, cæterarum areisque lateralibus granulis perpaucis obscurè radiatis; fuscâ, lineis lutescentibus radiatâ, maculâ trigonâ atratâ per summitatem umbonalem utriusque valvæ; ligamento corneo, translucido.*

THE DARK CHITON. Shell oblong-ovate, valves smooth, the terminal, posterior truncated, and lateral areas of the rest obscurely rayed with a very few granules; brown, rayed with yellowish lines, with a dark triangular spot on the umbonal summit of each valve; ligament horny, transparent.

SOWERBY, Mag. Nat. Hist., 1840; Conch. Illus. f. 57, 58.

Hab. ——?

Mr. Sowerby quotes the Falkland Islands as the habitat of this species; I cannot, however, imagine it to belong to so cold a region.

Species 104. (Mus. Cuming.)

CHITON METALLICUS. *Chit. testâ oblongo-ovatâ, valvis terminalibus cæterarum areisque lateralibus radiatim liratis, liris granatis, posticis bifurcatis, centralibus medio lævibus, latera versus longitudinaliter crebriliratis; olivaceo-nigricante; ligamento granoso-coriaceo.*

THE METALLIC CHITON. Shell oblong-ovate, terminal valves and lateral areas of the rest radiately ridged, ridges grained, the posterior bifurcated, central areas of the rest radiately ridged, ridges grained, the posterior bifurcated, central areas smooth in the middle, longitudinally closely ridged towards the sides; olive-black; ligament granosely coriaceous.

Hab. Australia.

Not unlike the dark bronze variety of *C. squamosus*, but upon examination will be found to differ materially.

Species 105. (Mus. Cuming.)

CHITON GRAYI. *Chit. testâ ovatâ, valvis terminalibus cæterarum areisque lateralibus radiatim granatis, granis solitariis, distantibus, centralibus obscurè exilissimè convergentibus, sulco conspicuo utrinque summitatem umbonalem utriusque valvæ nisi ultimæ et penultimæ; lutescente-roseâ, ad laterà albivariegatâ; ligamento corneo, translucido.*

GRAY'S CHITON. Shell ovate, terminal valves and lateral areas radiately grained, grains solitary, distant, central areas obscurely very faintly ridged, ridges converging posteriorly, with a conspicuous groove on either side the umbonal summit of each valve, except the last and last but one; yellowish rose-colour, variegated at the sides with white; ligament horny, transparent.

SOWERBY, Pro. Zool. Soc. 1832. p. 57.

Hab. Island of St. Laurence, Bay of Callao, Peru (found attached to shells at the depth of seven fathoms); Cuming.

Having somewhat the aspect of *C. crenulatus*, but quite distinct.

Species 106. (Mus. Cuming.)

CHITON SCABER. *Chit. testâ subelongato-ovatâ, valvis undique creberrimè minutè granoso-scabris, costatis, costis solitariis, distantibus; viridi-fusco roseoque variâ; ligamento corneo, setoso.*

THE ROUGH CHITON. Shell somewhat elongately ovate, valves very closely minutely granosely rough, radiately ribbed, ribs solitary, distant; variegated with greenish brown and pink; ligament horny, bristly.

Hab. Central America.

Allied to *C. setosus*, but amply distinguished as above characterized.

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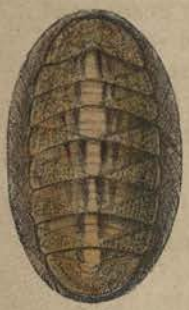

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Sowerby del et lith

Specimens magnified two thirds

Reeve imp

CHITON.

PLATE XVIII.

Species 96. (Mus. Cuming.)

CHITON DISPAR. *Chit. testâ ovatâ, valvis terminalibus cæterarum areisque lateralibus creberrimè planigranatis, centralibus lævibus, aut, sub lente, minutissimè reticulatis, ad latera corrugato-striatis; cinereâ, nigro-olivaceo et interdum albo variâ; ligamento granoso-coriaceo, tessellato.*

THE UNEQUAL CHITON. Shell ovate, terminal valves and lateral areas of the rest very closely flatly grained, central areas smooth, or, under the lens, very minutely reticulated, striated in a wrinkled manner at the sides; ash colour, variegated with blackish olive and sometimes white; ligament granosely coriaceous, tessellated.

SOWERBY, Pro. Zool. Soc. 1832. p. 58.

Hab. Island of Saboga, Panama (under stones); Cuming.

The specimen here figured is characterized by a sprinkle of white specks, which does not occur in the example figured by Mr. Sowerby in the 'Conchological Illustrations'.

Species 107. (Mus. Cuming.)

CHITON DECUSSATUS. *Chit. testâ oblongo-ovatâ, posticè subattenuatâ, valvis terminalibus cæterarum areisque lateralibus granatis, granis subobtusis numerosis irregularibus interstitiis scabris, areis centralibus striis subcorrugatis creberrimè decussatis; pallidè luteo-virescente, fusco per summitatem flammatâ.*

THE DECUSSATED CHITON. Shell oblong-ovate, a little attenuated posteriorly, terminal valves and lateral areas of the rest grained, grains rather obtuse, numerous, irregular, interstices rough, central areas decussated with very close slightly wrinkled striæ; pale yellowish green, flamed along the summit with brown.

Hab. Australia; Jukes.

The sculpture of the central and lateral areas affords a pleasing contrast in this species.

Species 108. (Mus. Cuming.)

CHITON LABECULATUS. *Chit. testâ ovatâ, valvis terminalibus cæterarum areisque lateralibus radiatim sulcatis et obscurè granulatis, valvâ terminali posticâ umbonatâ, areis centralibus creberrimè elevato-striatis; cinereâ, fusco interdum variegatâ; ligamento subtilissimè granoso-coriaceo.*

THE BLEMISHED CHITON. Shell ovate, terminal valves and lateral areas of the rest radiately grooved and obscurely granulated, posterior terminal valve umbonated, central areas very closely elevately striated; ash-colour, sometimes variegated with brown; ligament very minutely granosely coriaceous.

Hab. ——?

The lateral areas of this species are scarcely raised, with the radiating grooves developed about the middle of them only; it approximates the *C. Rissoi*.

Species 109. (Mus. Cuming.)

CHITON ASTRIGER. *Chit. testâ oblongo-ovatâ, valvis parvis, summitate lævibus, utrinque creberrimè striolatis; viridi; ligamento corneo, spicularum sericarum cristis densis grandibus albis ornato.*

THE STAR-ENCIRCLED CHITON. Shell oblong-ovate, valves small, smooth along the summit, very closely finely striated on each side; green; ligament horny, ornamented with large dense tufts of white silky spiculæ.

Hab. Barbadoes.

One of the most beautiful of the fasciculate tribe I have met with.

Species 110. (Mus. Cuming.)

CHITON LYRATUS. *Chit. testâ ovatâ, medio elevatiusculâ, valvis terminalibus cæterarum areisque lateralibus lævibus, centralibus medio lævibus, ad latera longitudinaliter sulcatis; cinereo-virescente, maculâ trigonâ fuscescente per summitatem hic illic tinctâ; ligamento squamato-coriaceo, exiliter tessellato.*

THE HARP-STRINGED CHITON. Shell ovate, rather elevated in the middle, terminal valves and lateral areas smooth, central areas smooth in the middle, longitudinally grooved at the sides; ash-green, stained with a brown triangular spot here and there along the summit; ligament squamately coriaceous, faintly tessellated.

SOWERBY, Mag. Nat. Hist. 1840. Conch. Illus. f. 126.

Hab. Prince Island, West Africa (under stones) Rev. W. V. Hennah.

It not unfrequently happens that the central areas of a species are smooth, whilst the terminal and lateral areas are sculptured, but rarely the reverse of this as in the present instance.

Species 111. (Mus. Cuming.)

CHITON PROTEUS. *Chit. testâ oblongo-ovatâ, valvis terminalibus cæterarum areisque lateralibus radiatim liratis, liris subnodulosis, hic illic bifurcatis, posticis numerosis brevibus posticè divergentibus, areis centralibus minutè reticulatis, ad latera elevato-striatis; olivaceo-viridi aurantio-coccineoque variegatâ; ligamento squamato-coriaceo, tessellato.*

THE PROTEAN CHITON. Shell oblong-ovate, terminal valves and lateral areas of the rest radiately ridged, ridges slightly nodulous, here and there bifurcated, the posterior numerous, short, diverging posteriorly, central areas minutely reticulated, elevately striated at the sides; variegated with olive green and orange-scarlet; ligament squamately coriaceous, tessellated.

Hab. Newcastle, Australia; Dr. Dieffenbach.

This very pretty species of which there are numerous examples in the British Museum is closely allied to *C. longicymba*, and presents the same picturesque varieties of colouring; its sculpture is more forcibly developed, and on the lateral areas, exhibits a bifurcated divergent character.

Species 112. (Mus. Cuming.)

CHITON FORTILIRATUS. *Chit. testâ ovatâ, valvis medio subrostratis, posticâ terminali umbonatâ, retusâ, areis lateralibus concaviusculis, anticè granulatis, centralibus fortiter arcuatè liratis; lutescente, viridi variegatâ, medio rufescente tinctâ; ligamento corneo.*

THE STRONG-RIDGED CHITON. Shell ovate, valves somewhat beaked in the middle, posterior terminal valve umbonated, blunt, lateral areas rather concave, granulated anteriorly, central areas strongly arcuately ridged; yellowish, variegated with green, stained with red in the middle; ligament horny.

Hab. Raines' Island, Torres Straits; Capt. Ince,

The ridges of the central areas of the valves are curved in a somewhat concentric style from the umbonal summit; another peculiarity in the species is that only an anterior slip of the lateral areas are granulated.

Species 113. (Mus. Cuming.)

CHITON CLATHRATUS. *Chit. testâ ovatâ, elevatiusculâ, valvis terminalibus cæterarum areisque lateralibus radiatim rugoso-granatis, centralibus peculiariter crebriclathratis; nigricante-viridi; ligamento subtiliter granoso-coriaceo, obscurè tessellato.*

THE LATTICED CHITON. Shell ovate, rather elevated, terminal valves and lateral areas of the rest radiately roughly grained, central areas peculiarly closely latticed; blackish green; ligament finely granosely coriaceous, obscurely tessellated.

Hab. —— ?

Distinguished by the closely latticed sculpture of the central areas.

Fig. 114. (Mus. Cuming.)

The shell here represented is somewhat peculiar in form, and the surface appears to be very minutely reticulated; being eroded, however, and the character much obscured, I must hesitate to describe it as new.

For Sp. 114 see Plate XXV.

Species 115. (Mus. Cuming.)

CHITON RUGOSUS. *Chit. testâ oblongo-ovatâ, valvis utrinque biradiatim costatis et obscurè corrugatis, medio lævibus, depressiusculis, valvâ anticâ terminali decemcostatâ, posticâ parvâ, declivi; albidâ aut lutescente, rufescente viridique marmoratâ, maculâ parvâ nigrâ hic illic notatâ; ligamento corneo, setis duris brevibus sparsim obsito.*

THE ROUGH CHITON. Shell oblong ovate, valves with two radiating ribs, and obscurely wrinkled, on each side, smooth and rather depressed in the middle, anterior terminal valve ten-ribbed, posterior small, slanting; whitish or yellowish, marbled with faint red or green and marked here and there with a small black spot; ligament horny, sparingly beset with hard short bristles.

GRAY, Sowerby Conch. Illus. Cat. no. 6. f. 49.

Chiton bicolor, Adams.

Hab. St. Vincents and Trinidad, West Indies (on exposed rocks); Guilding.

So closely allied in colour and sculpture to the *C. setosus* of Guacomayo, it is important to notice that in that species the posterior terminal valve is umbonated and abruptly retuse whilst in this it is slanting.

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Sowerby del et lith.

Specimens magnified two thirds

Reeve imp.

CHITON.

PLATE XIX.

(Figures moderately magnified.)

Species 116. (Mus. Cuming.)

CHITON JANEIRENSIS. *Chit. testâ oblongo-ovatâ, valvis terminalibus fortiter granato-costatis, areis lateralibus elevatis, bi-tri-costatis, centralibus tenuiter granulato-liratis, interstitiis excavatis; sordidè albâ aut fuscescente; ligamento corneo.*

THE JANEIRO CHITON. Shell oblong-ovate, terminal valves strongly granately ribbed, lateral areas elevated, two-three-ribbed, central areas finely granulately ridged, interstices excavated; dull white or brownish; ligament horny.

GRAY, Spicilegia Zoologica, p. 6. f. 8.

Chiton Elênensis, Sowerby.

Hab. Rio Janeiro. St. Elena, West Columbia; Cuming.

Having discovered this to be the *C. Janeirensis* of Gray, and not the shell figured by Mr. Sowerby in his Conch. Illustrations, and by myself at Plate XV. of this Monograph, I propose to substitute the name *C. Sowerbianus*, for that species, which is of larger size and differently sculptured.

Species 117. (Mus. Cuming.)

CHITON FLOCCATUS. *Chit. testâ ovatâ, valvis undique conspicuè seriatim granatis, granis arearum centralium tenuioribus, areis lateralibus subangustis, obscurè bi-triliratis, valvâ terminali posticâ umbonatâ, abruptè retusâ; purpureo-rufo viridique vividè variegatâ; ligamento corneo, subarenaceo.*

THE WOOLLY CHITON. Shell ovate, valves conspicuously granate in rows throughout, grains of the central areas the finer, lateral areas rather narrow, obscurely two-three-ridged, posterior terminal valve umbonated and abruptly retuse; brightly variegated with purple-red and green, ligament horny, subarenaceous.

SOWERBY, Pro. Zool. Soc. 1841. p. 104.

Hab. Cagayan, Island of Mindanao, Philippines (under stones); Calapan, Island of Mindoro, Philippines (on small stones at the depth of fifteen fathoms); Cuming.

All the examples I have seen of this species are remarkable for their richness of colouring.

Species 118. (Mus. Cuming.)

CHITON RUGULATUS. *Chit. testâ oblongo-ovatâ, medio lævi, ad extremitates lateraque concentricè corrugato-incisâ, viridi aut rubrâ, maculis albidis parvis interspersis; ligamento corneo, arenaceo; albido, rubro aut viridi; tessellato.*

THE FINELY WRINKLED CHITON. Shell oblong, smooth in the middle, concentrically engraved in a wrinkled manner at the sides and extremities; green or red, interspersed with small white spots; ligament horny, arenaceous, whitish, tessellated with red or green.

SOWERBY, Pro. Zool. Soc. 1833.

Hab. Puerto Portrero and Inner Lobos Island, Central America (under stones at low water); Cuming.

Chiefly distinguished by its concentric style of engraving, the wrinkled striæ of the lateral areas being parallel, in a manner, with those of the central.

Fig. 119. (Mus. Cuming.)

The shell here figured proves on further examination to be a state of the *C. fascicularis*.

For Sp. 112. see Plate XXVI.

Species 120. (Mus. Cuming.)

CHITON CRISPUS. *Chit. testâ subelongato-ovatâ, valvis terminalibus cæterarum areisque lateralibus subtiliter decussatim granulato-crispis, centralibus lævibus, aut, sub lente, minutissimè reticulatis; olivaceo-viridi, saturatiorè multipunctatâ; ligamento minutè granuloso-coriaceo, obscurè tessellato.*

THE CRISPED CHITON. Shell rather elongately ovate, terminal valves and lateral areas of the rest finely decussately granulately crisped, central areas smooth, or, under the lens, very minutely reticulated; olive-green, thickly painted with dots of a darker colour; ligament minutely granulously coriaceous, obscurely tessellated.

Hab. Australia.

Allied to *C. longicymba*, but distinguished from that species by the minute decussated character of the sculpture of the lateral areas.

Fig. 121. (Mus. Cuming.)

An obscure state of the *C. Siculus*; for species 121. see Plate XXVI.

Species 122. (Mus. Cuming.)

CHITON RISSOI. *Chit. testâ ovatâ, valvis terminalibus cæterarum areisque lateralibus tenuè granoso-striatis, obscurè concentricè corrugatis, centralibus creberrimè striolatis; cinereâ; saturatiorè variegatâ; ligamento minutissimè granuloso-coriaceo.*

RISSO'S CHITON. Shell ovate, terminal valves and lateral areas of the rest finely granosely striated, obscurely concentrically wrinkled, central areas very closely striated; ash colour, variegated with darker ash; ligament very minutely granosely coriaceous.

PAYRAUDEAU, Cat. Moll. de Corse, p. 87. pl. 3. f. 4–5.

Hab. Mediterranean. Coast of Sicily; Philippi.

The specimen here figured has rather a gigantic appearance from the circumstance of its being unusually large, and further magnified to the scale of the species which accompany it.

Species 123. (Mus. Cuming.)

CHITON ADELAIDENSIS. *Chit. testâ subabbreviato-ovatâ, undique, sub lente, minutissimè reticulatâ, valvis terminalibus cæterarum areisque lateralibus tenuiliratis, liris undulatis, centralibus lævibus, areis lateralibus non elevatis; livido-olivaceâ luteâque, medio fusco flammatâ, valvarum marginibus posticis fusco articulatis; ligamento granato-coriaceo, granis peramplis.*

THE ADELAIDE CHITON. Shell somewhat shortly ovate, very minutely reticulated throughout, under the lens, terminal valves and lateral areas of the rest finely ridged, ridges waved, central areas smooth, lateral areas not raised; livid olive and yellow, flamed with brown in the middle, posterior edges of the valves articulatedwith brown; ligament granately coriaceous, grains very large.

Hab. Port Adelaide, New Holland; Harvey.

A very characteristic species which there is no fear of confounding with any other.

Species 124. (Mus. Cuming.)

CHITON CILIATUS. *Chit. testâ oblongo-ovatâ, valvâ anticâ terminali radiatim octo-liratâ, interstitiis undatim granoso-striatis, parvâ, retusâ, areis lateralibus anticè uniliratis, decussatim granoso-striatis, centralibus longitudinaliter granoso-striatis, granis undique obtusis; cinereo-viridi, medio lutescente sparsim tinctâ; ligamento corneo, setis perpaucis obsito.*

THE CILIATED CHITON. Shell oblong ovate, anterior terminal valve radiately eight-ridged, interstices undately granosely striated, posterior small retuse, lateral areas anteriorly decussately granosely striated, grains obtuse throughout; ash-green, sparingly stained with yellow towards the middle; ligament horny, beset with a few bristles.

SOWERBY, Mag. Nat. Hist. 1840. Conch. Illus. f. 76.

Hab. New Zealand; Earl.

This shell approaches so nearly to the *C. Hindsii*, that it might almost be regarded as a variety; upon comparing it, however, with the young of that species it will be found that the grains of the central areas are arranged with more longitudinal precision, whilst the posterior terminal area is more retuse.

Fig. 125. (Mus. Cuming.)

CHITON LONGICYMBA.

For this species see Plate XXV. Being an extremely variable one, I have thought it necessary to give representations of further varieties.

For Sp. 125 see Pl. XXVI.

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CHITON.

PLATE XX.

(Figures moderately magnified.)

Species 126. (Mus. Cuming.)

CHITON VIRESCENS. *Chit. testâ ovatâ, valvis lævibus, margine postico crenulatis; vividè virescente; ligamento corneo.*

THE GREEN CHITON, Shell ovate, valves smooth, crenulated along the posterior edge; bright pale green; ligament horny.

Chiton stramineus, var. Sowerby.

Hab. —— ?

Sufficiently distinguished in form from the *C. stramineus.*

Species 127. (Mus. Cuming.)

CHITON COARCTATUS. *Chit. testâ oblongo-ovatâ, valvis medio lævibus, subrostratis, areâ reniformi utrinque minutè granuloso-asperâ, deinde lævigatâ, valvâ posticâ terminali umbonatâ, brevi, retusâ; rubescente; ligamento corneo.*

THE CONTRACTED CHITON. Shell oblong-ovate, valves smooth in the middle, somewhat beaked, with a reniform area on each side, minutely granulously rough, then smooth, posterior terminal valve umbonated, short retuse; reddish; ligament horny.

SOWERBY, Pro. Zool. Soc. 1841.

Hab. Island of Bohol, Philippines; Cuming.

The sculpture of this shell is very similar to that of the fasciculate species of the Mediterranean.

Fig. 128 and 133. (Mus. Cuming.)

Notwithstanding the apparent dissimilitude in these shells, I am forced to the conclusion that they are both varieties of the *C. rugulatus*, Sp. 118,

For Sp. 128 and 133, see Plate XXVI.

Species 129. (Mus. Cuming.)

CHITON PUNCTULATISSIMUS. *Chit. testâ ovatâ, lævi aut, sub lente, minutissimè reticulatâ, et obscurè punctuatâ; luteo-rufescente, concinnè lentiginosâ, interdum hic illic intensè rubido-castaneâ; ligamento minutissimè squamato-coriaceo.*

THE FINELY PUNCTURED CHITON. Shell ovate, smooth, or, under the lens, very minutely reticulated, and obscurely punctured; yellowish-red, prettily speckled, sometimes stained in parts with deep reddish chesnut; ligament very minutely squamately coriaceous.

SOWERBY, Pro. Zool. Soc. 1847.

Hab. Shores of Peru, (found on dead shells at a depth of from six to ten fathoms); Cuming.

Obscurely punctured and neatly freckled in colour throughout.

Species 130. (Mus. Cuming.)

CHITON CATENULATUS. *Chit. testâ subelongato-ovatâ, valvis terminalibus cæterarum areisque lateralibus striis concentricè rugulatis, centralibus creberrimè minutè liratis; virescente-flavâ; ligamento corneo.*

THE CATENULATE CHITON. Shell somewhat elongately ovate, terminal valves and lateral areas of the rest wrinkled with concentric striæ, central areas very closely minutely ridged; greenish yellow, ligament horny.

SOWERBY, Pro. Zool. Soc. 1832.

Hab. Inner Lobos Island, coast of Peru (under stones at low water); Cuming.

Partaking rather of the character of *C. rugulatus.*

Species 131. (Mus. Cuming.)

CHITON PALLIDULUS. *Chit. testâ elongatâ, valvis terminalibus cæterarum areisque lateralibus concentricè undulato-rugatis, centralibus minutè asperis; undique albidâ; ligamento corneo, arenaceo, albido.*

THE PALE CHITON. Shell elongated, terminal valves and lateral areas of the rest concentrically undulately wrinkled, central areas minutely rough; whitish throughout; ligament horny, arenaceous whitish.

Hab. —— ?

In detail of sculpture, this shell is not much unlike the *C. rugulatus*, from which however it may be distinguished by the semilunar form of the valves.

Species 132. (Mus. Cuming.)

CHITON PULCHERRIMUS. *Chit. testâ oblongo-ovatâ, medio subangulatim elevato, valvis terminalibus conspicuè tricostatis, costis nodulosis, cæterarum areis lateralibus tricostatis, costis quoque nodulosis, areis centralibus*

subprofundè sulcatis, sulcis clathratis, valvâ posticâ terminali umbonatâ; viridi-fuscescente, rubido tinctâ; ligamento granato-coriaceo.

THE VERY BEAUTIFUL CHITON. Shell oblong-ovate, somewhat angularly raised in the middle, terminal valves conspicuously ribbed, ribs nodulous, central areas somewhat deeply grooved, grooves latticed, posterior terminal valve umbonated; greenish brown, stained with red; ligament granately coriaceous.

SOWERBY, Pro. Zool. Soc. 1841. p. 103.

Hab. Gindulman, Island of Bohol, Philippines (in the crevices of rocks at low water); Cuming.

The sculpture of this species is very elaborate and developed with peculiar force.

Species 134. (Mus. Cuming.)

CHITON SUEZIENSIS. *Chit. testâ oblongo-ovatâ, valvis ad latera creberrimè concentricè undulato-rugatis, rugis medium versus obliquis, umbonibus subrostratis depressis; lutescente, pallidè coccineo viridique eximiè tinctâ, ligamento corneo.*

THE SUEZ CHITON. Shell oblong-ovate, valves very closely concentrically wrinkled at the sides, with oblique wrinkles towards the middle; yellowish, delicately stained with pale scarlet and green; ligament horny.

Hab. Gulf of Suez.

A very interesting and well-defined species, from the collection of W. Metcalfe, Esq.

Species 135. (Mus. Cuming.)

CHITON LAQUEATUS. *Chit. testâ oblongo-ovatâ, valvis obtusè rugoso-granatis, anticâ terminali quinque-costatâ, costis depressiusculis, posticâ terminali vix umbonatâ, concavo-depressâ, ecostatâ, cæterarum areis lateralibus unicostatis, centralibus medio subcarinatis; violaceo-purpureâ, albo viridique notatâ; ligamento corneo.*

THE FLUTED CHITON. Shell oblong-ovate, valves obtusely roughly grained, anterior terminal valve five-ribbed, ribs rather depressed, posterior terminal valve scarcely umbonated, concavely depressed, not ribbed, lateral areas of the rest one-ribbed, central areas slightly keeled in the middle; violet purple, marked with white and green; ligament horny.

Hab. Calapan, Island of Mindoro, Philippines (found in coarse sand among small stones at the depth of nine fathoms); Cuming.

The umbonal ridge of this very characteristic species is marked in each valve with a triangular spot.

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LIBRARY OF THE ROYAL ASIATIC SOCIETY

CHITON.

PLATE XXI.

Species 136. (Mus. Gray.)

CHITON COLLIEI. *Chit. testâ ovatâ, valvâ anticâ terminali octo-radiatâ, posticâ parvâ, umbonatâ, areis lateralibus granatis, marginibus conspicuè elevatis, fortiter granatis, areis centralibus longitudinaliter tenuiliratis, liris minutè granulatis, subundulatis, interstitiis excavatis; olivaceo-nigricante; ligamento corneo, densissimè longisetoso.*

COLLIE'S CHITON. Shell ovate, anterior terminal valve eight-rayed, the posterior small, umbonated, lateral areas grained, edges conspicuously raised, strongly grained, central areas longitudinally finely ridged, ridges minutely granulated, a little waved, interstices excavated; olive-black, ligament horny, very thickly beset with long bristles.

GRAY, MSS. (private cabinet.)

Hab. —— ?

A most elaborately sculptured species, chiefly remarkable on account of the lateral areas being depressely flattened, whilst their strongly granulated edges are conspicuously raised, in the form of diverging ridges. It appears to have been collected during the voyage of H.M.S. Blossom, and is extremely well figured by Mr. Sowerby in Capt. Beechey's volume of the Zoology (Pl. 41. fig. 17); having been named, however, *C. setosus* in error, Mr. Gray proposes that it be dedicated to the memory of the late Mr. Collie, assistant-surgeon of the Expedition.

Fig. 137. (Mus. Gray.)

The specimen here represented proves to be a state of the *C. Barnesii*, in which the ligament is stripped of its calcareous grains, and the valves contracted one upon the other. For Species 137, see Pl. XXVI.

Species 138. (Mus. Brit.)

CHITON GUILDINGII. *Chit. testâ ovatâ, valvis medio lævibus aut striatis, ad latera unicostatis et nitidè undato-corrugatis, posticâ terminali retusâ; lateribus viridibus, medio albâ, nigro flammatâ; ligamento corneo, translucido, densè setoso.*

GUILDING'S CHITON. Shell ovate, valves smooth, or striated in the middle, with a single rib at the sides, the ground sculpture being neatly waved-wrinkled, posterior terminal valve retuse; sides green, white in the middle, flamed with black; ligament horny, transparent, densely bristled.

Chiton setosus, Wood, Ind. Test. Supp.

Hab. St. Vincents, West Indies.

I dedicate this interesting and apparently rare species, to the memory of the Rev. Lansdowne Guilding, to whom science is much indebted for his investigation of the natural history of the island of which it is an inhabitant.

Species 139. (Mus. Brit.)

CHITON NOBILIS. *Chit. testâ ovatâ, lævigatâ aut punctiunculis minutis elevatis undique creberrimè notatâ, areis lateralibus exiliter radiatim sulcatis; rufescente-chocolato-fuscâ, immaculatâ; ligamento corneo, setis duris brevissimis obsito.*

THE NOBLE CHITON. Shell ovate, smooth or very closely marked throughout with minute raised dots, lateral areas faintly radiately grooved; reddish chocolate-brown, unspotted; ligament horny, beset with very short hard bristles.

GRAY, MSS. British Museum.

Hab. ——?

A fine species, of simple character yet perfectly distinct; indeed it has no similitude with any hitherto described.

Species 140. (Mus. Brit.)

CHITON VIRGULATUS. *Chit. testâ oblongo- vel subelongato-ovatâ, valvis terminalibus cæterarum areisque lateralibus creberrimè radiatim striatis, striis elevatis, crassiusculis deinde tenuioribus et undulatis, areis centralibus pulcherrimè longitudinaliter arcuatim elevato-striatis; olivaceâ, medio lutescente olivaceo variegatâ; ligamento granoso-coriaceo, tessellato.*

THE STRIPED CHITON. Shell oblong or subelongately ovate, terminal valves and lateral areas of the rest very closely radiately striated, striæ raised, rather thick, then thin, and little waved, central areas very beautifully arcuately elevately striated; dark olive, yellowish in the middle, variegated with olive; ligament granosely coriaceous, tessellated.

SOWERBY, Mag. Nat. Hist. 1840.

Hab. ——?

The form of this species varies considerably from oblong-

ovate to somewhat elongately ovate; it is characterized by a particularly neat style of sculpture.

Species 141. (Mus. Cuming.)

CHITON CIMOLIUS. *Chit. testâ oblongo-ovatâ, valvis terminalibus cæterarum areisque lateralibus radiatim granatis, granis solitariis, subirregularibus, peculiariter decumbentibus, valvâ anticâ terminali umbonem versus retrorsum inflexâ, posticâ conspicuè umbonatâ, areis centralibus medio lævibus, utrinque liratis, liris tenuibus, vix granulatis subdistantibus interstitiis excavatis; lutescente-fuscâ; ligamento squamato-coriaceo, tessellato.*

THE FULLER'S-EARTH CHITON. Shell oblong-ovate, terminal valves and lateral areas of the rest radiately grained, grains solitary, somewhat irregular, peculiarly decumbent, anterior terminal valve reflected back towards the umbo, posterior conspicuously umbonated, central areas smooth in the middle, ridged on each side, ridges thin, scarcely granulated, rather distant, interstices hollowed; yellowish-brown; ligament squamately coriaceous, tessellated.

Hab. Australia.

Allied in form, but not in sculpture, to the *C. volvox*; at a loss for a name, I have distinguished its resemblance in colour to the common fuller's clay.

Species 142. (Mus. Brit.)

CHITON NOVÆ-HOLLANDIÆ. *Chit. testâ oblongo-ovatâ, valvis terminalibus cæterarum areisque lateralibus obscurè radiatim verrucoso-liratis et concentricè irregulariter sulcatis, areis centralibus lævibus, aut, sub lente, minutissimè reticulatis; viridi, olivaceo maculatâ; ligamento granoso-coriaceo, nigricante.*

THE NEW HOLLAND CHITON. Shell oblong-ovate, terminal valves and lateral areas of the rest obscurely radiately verrucosely ridged and concentrically irregularly grooved, central areas smooth, or, under the lens, very minutely reticulated; green, blotched with olive; ligament granosely coriaceous, blackish.

GRAY, MSS. British Museum.

Hab. New Holland.

The general aspect of this shell is not much unlike that of the *C. australis*, from the same locality; it is, however, amply distinguished by its smooth central areas, the obscurely wart-like character of the radiating ridges of the lateral areas and its olive-blotched style of painting.

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CHITON.

PLATE XXII.

(Specimens moderately magnified.)

Species 143. (Mus. Cuming.)

CHITON SINCLAIRI. *Chit. testâ ovatâ, valvis terminalibus cæterarum areisque lateralibus granis amplis depressiusculis conspicuè radiatis, centralibus medio lævibus, utrinque corrugato-striatis; ligamento squamato-coriaceo; olivaceo-viridi, albi-lentiginosâ.*

SINCLAIR'S CHITON. Shell ovate, terminal valves and lateral areas of the rest conspicuously rayed with large rather depressed grains, central areas smooth in the middle, wrinkled on each side; ligament squamately coriaceous; olive-green, speckled with white.

GRAY, Spicilegia Zoologica.

Hab. Van Dieman's Land; Dr. Sinclair R.N.

Very closely allied to the *C. Capensis* and *pellis-serpentis*, but distinguished from both by the peculiar structure of the granules, which, to use a mournful comparison, have an appearance like the nails on a coffin.

Species 144. (Fig. *a* and *b*. Mus. Brit.)

CHITON STRIOLATUS. *Chit. oblongo-ovatâ, valvis medio lævibus, aut, sub lente, minutissimè reticulatis, latera versus concentricè undulato-striatis; viridescente aut rosaceâ; ligamento squamato-coriaceo, squamis parvis, sub lente minutissimè striolatis.*

THE FINELY STRIATED CHITON. Shell oblong-ovate, valves smooth, or, under the lens, very minutely reticulated, in the middle, concentrically undulately striated towards the sides; greenish or pinkish; ligament squamately coriaceous, scales small, very minutely striated under the lens.

GRAY, Spicilegia Zoologica.

Hab. Rio de Janeiro.

The fine transverse striæ which characterize the scales of the ligament, are only to be discerned with the aid of a powerful lens.

Species 145. (Mus. Brit.)

CHITON CASTUS. *Chit. testâ oblongo-ovatâ, undique conspicuè granulatis, granulis solitariis, areârum centralium seriatim longitudinaliter ordinatis, lateralium promiscuis; subrosaceâ et lutescente; ligamento corneo, setigero.*

THE CHASTE CHITON. Shell oblong-ovate, conspicuously granulated throughout, granules solitary, arranged on the central areas in longitudinal rows, on the lateral areas promiscuously; pinkish and yellowish; ligament horny, bristly.

Hab. ——?

A very delicate and neatly sculptured species, distinguished by the character and arrangement of the granules.

Species 146. (Mus. Brit.)

CHITON CROCINUS. *Chit. testâ ovatâ, valvis terminalibus cæterarum areisque lateralibus rugis undulatis concentricè exculptis, superficie minutissimè punctuatâ, centralibus liris minutis obliquis undulato-decussatis; crocinâ, medio purpurascente tinctâ; ligamento corneo, tessellato.*

THE SAFFRON CHITON. Shell ovate, terminal valves and lateral areas of the rest concentrically sculptured with waved wrinkles, the surface being most minutely punctured, central areas undulately decussated with minute ridges; saffron yellow, stained in the middle with light purple; ligament horny, tessellated.

Hab. ——?

A species most peculiar in colour, and not less in sculpture; the surface of the central areas having the appearance of coarse cloth or canvas.

Species 147. (Mus. Brit.)

CHITON ILLUMINATUS. *Chit. testa ovatâ, valvis terminalibus cæterarum areisque lateralibus minutè granoso-scabris, centralibus subtilissimè liratis, liris subgranulatis, interstitiis excavatis, minutissimè reticulatis; ligamento corneo, arenaceo; undique rufâ, ligamento maculis albis ornato.*

THE ILLUMINATED CHITON. Shell ovate, terminal valves and lateral areas of the rest minutely granosely rough, central areas very finely ridged, ridges slightly granulated, interstices hollow and very minutely reticulated; ligament horny, arenaceous; red throughout, ligament marked with white spots.

Hab. Straits of Magalhaens.

The shell and ligament are all of an uniform red colour,

the latter being marked with a white light exactly in the places occupied, in the fasciculate species, by the tufts of spiculæ.

Species 148. (Mus. Brit.)

CHITON DIEFFENBACHII. *Chit. testâ subelŏngato-ovatâ, valvis punctis minutissimis elevātis obsitis, areis lateralibus vix elevatis, valvâ posticâ terminali umbonatâ; rubro, viridi luteoque variegatâ; ligamento corneo, arenaceo.*

DIEFFENBACH'S CHITON. Shell somewhat elongately ovate, valves covered with very minute raised dots, lateral areas scarcely raised, posterior terminal valve umbonated; variegated with red green and yellow; ligament horny, arenaceous.

Hab. Newcastle, Australia; Dr. Dieffenbach.

Named in honour of the eminent traveller in New Zealand and Australia, to whom we are indebted for much interesting information on the physical and natural history of those countries.

Species 149. (Mus. Brit.)

CHITON INSIGNIS. *Chit. testâ ovatâ, valvis lævibus, areis lateralibus vix elevatis; flavescente-rubrâ, areis centralibus rubidis, lineis albidis transversis, acutè undulatis, peculiariter notatis, valvarum margine postico albiarticulato; ligamento corneo, arenaceo.*

THE MARKED CHITON. Shell ovate, valves smooth, lateral areas scarcely raised; yellowish red, central areas darker red, peculiarly marked with fine sharp zigzag white transverse lines, posterior edge of the valves articulated with white; ligament horny, arenaceous.

Hab. Sitka, New Archangel; Hinds.

A striking species, collected by Mr. Hinds at the above-mentioned locality, during the expedition of the 'Sulphur,' but omitted in his 'Mollusca' of that voyage.

Species 150. (Mus. Brit.)

CHITON STANGERI. *Chit. testâ ovatâ, valvis terminalibus cæterarum areisque lateralibus granis subquadratis appressis, densè compactis, radiatis, centralibus medio lævibus, utrinque crebriliratis, interstitiis subprofundis; luteâ viridique, maculis viridibus tessellatâ; ligamento squamato-coriaceo.*

STANGER'S CHITON. Shell ovate, terminal valves and lateral areas of the rest rayed with rows of closely packed square appressed granules, central areas smooth in the middle, closely ridged on each side, interstices rather deep; yellow and green, tessellated with green spots; ligament squamately coriaceous.

Hab. New Zealand; Dr. Stanger.

Dedicated to the honour of another eminent traveller in New Zealand, whose name is worthy of being recorded under the present genus.

Species 151. (Mus. Brit.)

CHITON CAPENSIS. *Chit. testâ ovatâ, valvis terminalibus cæterarum areisque lateralibus radiatim multiseriatis, striis granulatis, centralibus lævibus aut latera versus leviter striatis; olivaceâ et viridescente; ligamento squamato-coriaceo, squamis grandibus.*

THE CAPE CHITON. Shell ovate, terminal valves and lateral areas of the rest radiately many-striated, striæ granulated, central areas smooth or slightly striated towards the sides; olive and green, ligament squamately coriaceous, scales large.

GRAY, Spicilegia Zoologica.

Hab. Cape of Good Hope; Capt. Carmichael.

The general aspect of this shell is not much unlike that of the *C. pellis-serpentis*; it is, however, uniformly smaller, and there is a considerable modification of the sculpture.

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CHITON.

PLATE XXIII.

(Specimens moderately magnified.)

Species 152. (Mus. Brit.)

CHITON CANCELLATUS. *Chit. testâ oblongo-ovatâ, valvis terminalibus cæterarum areisque lateralibus creberrimè granulatis, posticâ terminali conspicuè umbonatâ, areis centralibus longitudinaliter minutè sulcatis, sulcis latera versus subprofundis; albicante; ligamento corneo arenaceo.*

THE CANCELLATED CHITON. Shell oblong-ovate, terminal valves and lateral areas of the rest very closely granulated, posterior terminal valve conspicuously umbonated, central areas longitudinally minutely grooved, with the interstices cancellated, grooves rather deep towards the sides; whitish; ligament horny, arenaceous.

LEACH? Sowerby, Conch. Illus. f. 104. *a* and *b*.

Hab. Coast of Scotland.

This shell, with the aid of a good lens, will be found to have a very neat arrangement of sculpture, the central areas being curved with finely cancellated grooves, whilst the lateral are crowded with minute granules. It is perfectly distinct from the white variety of *C. cinereus* which has been confounded with it.

Species 153. (Mus. Brit.)

CHITON PULCHELLUS. *Chit. testâ ovatâ, valvis terminalibus radiatim nodoso-costatis, costis amplis areis lateralibus bicostatis, centralibus peculiariter minutè foveolatis; ligamento corneo; undique luteo-albidâ.*

THE PRETTY CHITON. Shell ovate, terminal valves radiately nodosely ribbed, ribs large, lateral areas two-ribbed, central areas peculiarly minutely pitted; ligament horny; yellowish white throughout.

GRAY, Spicilegia Zoologica.

Hab. Arica, Peru; Rev. W. V. Hennah.

The central areas of this pretty species are distinguished by a peculiarly indented or honey-comb style of sculpture.

Species 154. (Mus. Brit.)

CHITON INQUINATUS. *Chit. testâ oblongo-ovatâ, valvis terminalibus cæterarum areisque lateralibus concentricè subobscurè costatis, tenuè radiatim sulcatis, areis centralibus longitudinaliter tenuiliratis; ligamento corneo, arenaceo; albidâ, maculâ fuscescente per summitatem umbonalem utriusque valvæ tinctâ.*

THE SOILED CHITON. Shell oblong-ovate, terminal valves and lateral areas of the rest concentrically somewhat obscurely ribbed, finely radiately grooved, central areas longitudinally finely ridged; ligament horny, arenaceous; whitish, stained with a light brown spot along the summit of each valve.

Hab. Van Dieman's Land; Dr. Sinclair.

This shell is sometimes partially stained throughout with the faint brown colour which appears on the umbonal summit.

Species 155. (Mus. Brit.)

CHITON SEGMENTATUS. *Chit. testâ suboblongo-ovatâ, valvis terminalibus cæterarum areisque lateralibus nodis grandibus solitariis radiatim ordinatis pulcherrimè cælatis, areis centralibus longitudinaliter tenuiliratis, liris angustis, subgranulatis, interstitiis excavatis; ligamento corneo, granoso-coriaceo; albicante, lateribus rufescentibus, maculâ albâ, fusco-marginatâ, per summitatem utriusque valvæ.*

THE EMBROIDERED CHITON. Shell somewhat oblong ovate, terminal valves and lateral areas of the rest very beautifully carved with rays of large isolated nodules, central areas longitudinally finely ridged, ridges narrow, slightly granulated, interstices hollowed; ligament horny, granosely coriaceous; whitish, sides reddish, with a brown-edged white spot along the summit of each valve.

Hab. —— ?

A truly interesting species, amply distinguished from any other.

Fig. 156. (Mus. Gray.)

CHITON MILLERI. *Chit. testâ ovatâ, lævigatâ, areis centralibus, sub lente, minutissimè reticulatis, lateralibus tenuissimè striatis; olivaceâ vel interdum albâ, nigro maculatâ aut punctatâ; ligamento granoso-coriaceo, nigro luteoque tessellato.*

Miller's Chiton. Shell ovate, smooth, central areas, under the lens, most minutely reticulated, lateral areas very finely striated; olive or sometimes white, blotched and dotted with black; ligament granosely coriaceous, tessellated with black and yellow.

Gray, Spicilegia Zoologica.

Hab. Eastern Seas.

Extremely variable in colour, as may be seen in the further varieties figured in Pl. XXIV.

Species 157. (Mus. Gray.)

Chiton Mediterraneus. *Chit. testâ oblongo-ovatâ, valvis terminalibus cæterarum areisque lateralibus concentricè undulato-scabris, centralibus longitudinaliter sulcatis; albicante; ligamento granoso-coriaceo, fuscescente.*

The Mediterranean Chiton. Shell oblong-ovate, terminal valves and lateral areas of the rest undulately scabrous, central areas longitudinally grooved; whitish; ligament granosely coriaceous, pale brown.

Gray, MSS. (private cabinet).

Hab. Mediterranean.

In order not to confound this shell with the *C. Rissoi*, it may be observed that the lateral areas in that species are granulated.

The central figure, without number, represents the young of *C. Hennahi.*

Species 158. (Mus. Brit.)

Chiton carinulatus. *Chit. testâ oblongo-ovatâ, valvis terminalibus cæterarum areisque lateralibus concentricè et radiatim subobscurè liratis, granulis obtusis corrugato-ordinatis creberrimè exculptis, areis centralibus quoque granulatis, medio lævibus, summitate peculiariter carinatis; rubicundâ; ligamento subtiliter squamato-coriaceo.*

The finely-keeled Chiton. Shell oblong-ovate, terminal valves and lateral areas of the rest concentrically and radiately somewhat obscurely ridged, and sculptured with obtuse granules arranged in wrinkles, central areas also granulated, smooth in the middle, peculiarly keeled at the summit; ruddy rose; ligament finely squamately coriaceous.

Hab. Van Dieman's Land; Dr. Sinclair, R.N.

An extremely interesting species keeled in a peculiar manner along the umbonal summit.

Species 159. (Mus. Cuming.)

Chiton catillus. *Chit. testâ ovatâ, anticè attenuatâ, valvis terminalibus cæterarum areisque lateralibus concentricè liratis, granulis minutis radiatis, centralibus subtilissimè sulcatis et cancellatis; albidâ; ligamento corneo, arenaceo.*

The dish Chiton. Shell ovate, attenuated anteriorly, terminal valves and lateral areas of the rest concentrically ridged, radiated with minute granules, central areas very finely grooved and cancellated; whitish, ligament horny, arenaceous.

Hab. ——?

Distinguished by its anteriorly attenuated form, and general arrangement of sculpture.

Species 160. (Mus. Gray.)

Chiton cingillatus. *Chit. testâ ovatâ, valvis lævibus, liris duabus tribusve concentricis prope marginem circumdatâ; olivaceâ; ligamento granoso-coriaceo.*

The girdled Chiton. Shell ovate, valves smooth, surrounded near the margin with two or three concentric ridges; olive; ligament granosely coriaceous.

Hab. South America; Capt. Forbes Young.

The ridges at the end of the lateral areas form rows of concentric circles round the shell which are very characteristic.

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163a

163b

163c

163d

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156c

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CHITON.

PLATE XXV.

Species 166. (Mus. Cuming.)

CHITON HASTATUS. *Chit. testâ lanceolato-ovatâ, valvâ posticâ terminali peculiariter acuminatâ, valvis summitate lævibus, utrinque minutè granoso-scabris; cinereo-albidâ, medio nigricante; ligamento corneo, fasciculis parvis munito.*

THE SPEARED CHITON. Shell lanceolately ovate, posterior terminal valve peculiarly acuminated, valves smooth at the summit, minutely granulously roughened on each side; ashy white, blackish in the middle; ligament horny, furnished with small fasciculi.

SOWERBY, Conch. Illus. f. 127.

Hab. —— ?

The acuminated growth of the valves constitutes a remarkable feature in this species; in sculpture it approaches the *C. hirudiniformis.*

Species 167. (Mus. Cuming.)

CHITON LUZONICUS. *Chit. testâ ovatâ, valvis terminalibus cæterarum areisque lateralibus radiatim granulato-liratis, centralibus longitudinaliter liratis, liris subdistantibus; albidâ, viridi longitudinaliter flammatâ; ligamento corneo.*

THE LUZON CHITON. Shell ovate, terminal valves and lateral areas of the rest radiately granulously ridged, central areas longitudinally ridged, ridges rather distant; whitish, longitudinally flamed with green; ligament horny.

SOWERBY, Pro. Zool. Soc. 1841.

Hab. Sorsogon, Island of Luzon, Philippines (found attached to dead shells at the depth of fifteen fathoms); Cuming.

Apparently distinct, though it has the appearance of being an immature shell.

Fig. 168. (Mus. Cuming.)

This appears to be identical with Mr. Gray's *C. pulchellus.*

For Sp. 168. see Pl. XXVII.

Species 169. (Mus. Cuming.)

CHITON ANTIQUUS. *Chit. testâ oblongo-ovatâ, valvis terminalibus radiatim costatis, areis lateralibus bicostatis, costis grandibus, tumidis, subnodosis, areis centralibus longitudinaliter tenuiliratis, lirarum interstitiis minutè clathratis; olivaceo-viridi; ligamento corneo, squamato-coriaceo.*

THE ANTIQUE CHITON. Shell oblong-ovate, terminal valves radiately ribbed, lateral areas two-ribbed, ribs large, swollen, subnodose, central areas longitudinally finely ridged, interstices between the ridges minutely latticed; olive-green; ligament horny, squamately coriaceous.

Hab. Australia.

In the specimen of this beautifully carved species here represented, the ligament is unfortunately denuded of its scales; it approaches the *C. pulchellus* but differs in the sculpture of the central areas.

Species 170. (Mus. Cuming.)

CHITON DISSIMILIS. *Chit. testâ oblongo-ovatâ, valvis terminalibus cæterarum areisque lateralibus lævibus, areis centralibus longitudinaliter sulcatis, medio lævibus; rufo-fuscescente alboque variâ; ligamento granoso-coriaceo, tessellato.*

THE DISSIMILAR CHITON. Shell oblong-ovate, terminal valves and lateral areas longitudinally grooved, smooth in the middle; variegated with reddish brown; ligament granosely coriaceous, tessellated.

Hab. —— ?

Approximating in some measure to the *C. tulipa.*

Species 171. (Mus. Cuming.)

CHITON CAJETANUS. *Chit. testâ subelongtato-ovatâ, valvis terminalibus cæterarum areisque lateralibus concentricè costatis, costis grossis, areis centralibus longitudinaliter striatis; opaceo-albâ; ligamento corneo.*

THE CAJETA CHITON. Shell somewhat elongately ovate, terminal valves and lateral areas of the rest concentrically ribbed, ribs stout, central areas longitudinally striated; opake-white; ligament horny.

POLI, Test. utr. Sicil. pl. 4. f. 1.

Hab. Mediterranean.

A solid shell remarkable for the bold concentric sculpture of its terminal and lateral areas.

Species 172. (Mus. Cuming.)

CHITON CALIGINOSUS. *Chit. testâ ovatâ, valvis terminalibus cæterarum areisque lateralibus radiatim striatis, striis hic illic bifurcatis, areis centralibus minutè reticulatis; olivaceâ, nigricante variâ, valvarum marginibus posticis nigro-articulatis, ligamento granoso-coriaceo*

THE GLOOMY CHITON. Shell ovate, terminal valves and lateral areas of the rest radiately striated, striæ here and there bifurcated, central areas minutely reticulated; olive, variegated with black, posterior margins of the valves articulated with black; ligament granosely coriaceous.

Hab. Island of Negros, Philippines (under stones at low water); Cuming.

The articulated painting along the posterior edges of the valves is rather a conspicuous feature in this species.

Fig. 114.

The shell here figured has been unfortunately mislaid since the drawing was executed.

For Sp. 114 see Pl. XXVII.

Species 119. (Mus. Cuming.)

CHITON ROSEUS. *Chit testâ subelongato-ovatâ, valvis omnibus pulcherrimè concentricè sulcatis, sulcis leviter undulatis, valvâ posticâ terminali conspicuè umbonatâ; purpureo-roseâ.*

THE ROSE CHITON. Shell somewhat elongately ovate, all the valves very beautifully concentrically grooved, grooves a little waved, posterior terminal valve conspicuously umbonated; purple-rose

SOWERBY, Pro. Zool. Soc. 1832. p. 58.

Hab. Island of Plata, West Columbia (found attached to dead shells at the depth of seventeen fathoms); Cuming.

A very peculiarly sculptured species of an uniform semitransparent purple-rose hue.

Species 121. (Mus. Cuming,)

CHITON PICUS. *Chit. testâ ovatâ, anticè subattenuatâ, valvis terminalibus cæterarum areisque lateralibus granulatis, granulis obtusis, confertis, areis centralibus minutè reticulatis; nigro alboque variâ; ligamento granoso-coriaceo.*

THE MAGPIE CHITON. Shell ovate, a little attenuated anteriorly, terminal valves and lateral areas of the rest granulated, granules obtuse, close-set; central areas minutely reticulated; variegated with black and white; ligament granosely coriaceous.

Hab. ——?

Certainly distinct from any other species that as come under my notice.

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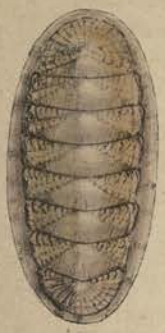

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LIBRARY OF THE BOMBAY BRANCH OF THE ASIATIC SOCIETY

Sowerby del et lith.

Reeve imp

CHITON.

PLATE XXVI.

(Specimens slightly magnified.)

Species 114. (Mus. Belcher.)

CHITON PETASUS. *Chit. testâ parvâ, subabbreviato-ovatâ, valvis medio areâ trigonâ subrostratâ politâ, utrinque rugoso-granatis; vividè coccineâ; ligamento latissimo, præcipuè anticè, quoque vividè coccineo, setis pilisve brevibus hic illic obsito.*

THE COAL-PORTER'S CAP CHITON. Shell small, somewhat abbreviately ovate, valves with a polished slightly beaked triangular area in the centre, roughly granulated on each side; bright scarlet; ligament very broad, especially in front, also bright scarlet, beset here and there with short hairs and bristles.

Hab. Cape Rivers; Belcher.

A beautiful little bright scarlet shell enframed within a broad swollen ligament of the same very striking colour; in the form of the ligament it is the nearest approach I have seen to that remarkable species the *C. Blainvillii*.

For this and other interesting species represented in the accompanying plate, I am indebted to the kindness and liberality of Capt. Sir Edward Belcher, by whom they were collected during his recent voyage in H.M.S. Samarang.

Species 177. (Mus. Metcalfe.)

CHITON SCULPTUS. *Chit. testâ oblongâ, valvis terminalibus cæterarum areisque lateralibus rugis granosis amplis posticè divergentibus conspicuè sculptis, areis centralibus striis acutè undulatis minutè reticulatis; ligamento minutissimè squamato-coriaceo.*

THE SCULPTURED CHITON. Shell oblong, terminal valves and lateral areas of the rest conspicuously sculptured with large granose wrinkles diverging posteriorly, central areas minutely reticulated with sharply undulated striæ; ligament very minutely squamately coriaceous.

SOWERBY, Conch. Illus. Cat. no. 44. f. 66.

Hab. ——?

Approximating in character to the *C. Proteus*, of which there is such a beautiful suite of specimens in the British Museum. Should it prove to be one of the states of that species the name *sculptus* must be applied to the whole.

Species 125. (Mus. Metcalfe.)

CHITON LÆVIS. *Chit. testâ ovatâ, valvis concentricè striatis, undique minutissimè reticulato-granulosis; rubrâ, viridescente hic illic marmoratâ; ligamento minutissimè granoso-coriaceo.*

THE SMOOTH CHITON. Shell ovate, valves concentrically striated, very minutely reticulately granulated throughout; red, marbled here and there with light green; ligament very minutely granosely coriaceous.

PENNANT, British Zoology, vol. iv. pl. 36. f. 3.

Hab. Shores of Britain.

Apparently smooth, but in reality very minutely reticulately granulated. Found by Mr. Metcalfe at Guernsey, but of rare occurrence in that locality.

Species 128. (Mus. Belcher.)

CHITON COREANICUS. *Chit. testâ ovatâ, elevatiusculâ, valvis terminalibus cæterarum areisque lateralibus radiatim sulcatis, interstitiis convexis peculiariter granatis, granis prominentibus, rotundatis, solitariis, valvâ terminali posticâ umbonatâ, extremitate radiatâ parvâ, brevi; areis centralibus longitudinaliter tenuissimè granato-liratis, lirarum interstitiis excavatis; areis lateralibus nigricante-viridibus, granis lutescentibus, areis centralibus lutescentibus nigro maculatis et variegatis; ligamento tenuiter granoso-coriaceo, nigricante-viridi et virescente concinnè tessellato.*

THE KOREAN CHITON. Shell ovate, rather elevated, terminal valves and lateral areas of the rest radiately grooved, interstices convex, peculiarly grained, grains prominent, round, solitary, posterior terminal valve umbonated, extremity radiate, small, short; central areas longitudinally very finely granosely ridged, interstices between the ridges hollowed; lateral areas blackish green, grains yellowish, central areas yellowish blotched and variegated with black; ligament finely granosely coriaceous, tessellated dark and pale green.

Hab. Korean Archipelago (under stones); Belcher.

The sculpture of this species is not much unlike that of the *C. luridus*; still it is distinct, and accompanied with a very characteristic style of painting. The central areas of the shell are of a yellowish ground, blotched and variegated with black. The terminal and lateral areas are very dark green, with the prominent granules conspicuously tinged here and there with yellow. The ligament is strikingly tessellated with dark and pale sea-green.

Species 133. (Mus. Metcalfe.)

CHITON PECTINATUS. *Chit. testâ subelongatâ, valvâ extremâ posticâ fortiter umbonatâ et retusâ, areis lateralibus elevatis, rudè sulcatis, centralibus conspicuè creberrimè liratis, liris umbones versus peculiariter*

convergentibus; viridi fusco rufoque variegatâ, arearum lateralium marginibus anticis nigro articulatis.

THE PECTINATED CHITON. Shell somewhat elongated, extreme posterior valve strongly umbonated and retuse, lateral areas elevated, rudely grooved, central areas conspicuously very closely ridged, ridges converging in a peculiar manner towards the umbones; variegated red-brown and green, front edges of the lateral areas articulated with black dots.

SOWERBY, Conch. Illus. Cat. no. 8. f. 146.

Hab. ——?

This species is apparently one of great rarity; I have not had the good fortune to meet with any other specimen than that here represented from the collection of W. Metcalfe Esq., and the ligament is not in sufficiently good condition, to enable me to make out the character represented in the 'Conchological Illustrations' by Mr. Sowerby, of short calcareous processes like those of *C. spiniger*.

Species 137. (Mus. Belcher.)

CHITON ACUTIROSTRATUS. *Chit. testâ elongatâ, medio elevatâ, lateraliter subcompressâ, valvis summitate obtuso-carinatis, lævibus, utrinque creberrimè planigranatis, umbonibus productis, acutè rostratis, valvarum areis lateralibus parvis, subindistinctis, concavis; albidâ, summitate nigro hic illic inquinatâ; ligamento corneo, spiculorum cristâ parvâ ad latus utriusque valvæ munito.*

THE SHARPLY BEAKED CHITON. Shell elongated, elevated in the middle, somewhat compressed at the sides, valves obtusely keeled at the summit, smooth, very closely flatly grained on each side, umbones produced, sharply beaked, lateral areas of the valves small, rather indistinct, concave; whitish, stained here and there along the summit with black; ligament horny, furnished at the side of each valve with a small crest of spicula.

Hab. Cape Rivers; Belcher.

An elongated species, of somewhat compressed growth, remarkably distinguished by the sharply beaked structure of the umbones; the flat-grained sculpture of the valves approaches that of *C. hirudiniformis*, to which it offers a singular contrast of colour.

Species 173. (Mus. Belcher.)

CHITON FORMOSUS. *Chit. testâ oblongâ, subangustâ, valvis summitate subtilissimè longitudinaliter striatis, ad latera granulatis; vividè coccineâ; ligamento corneo, spiculis vitreis nitidè albis densè obsito, spiculorum cristâ densâ erectâ ad latus utriusque valvæ.*

THE BEAUTIFUL CHITON. Shell oblong, rather narrow, valves very finely longitudinally striated at the summit, granulated at the sides; bright scarlet; ligament horny, thickly beset with shining white spicula, at the side of each valve.

Hab. Cape Rivers; Belcher.

A most exquisite little species of a bright scarlet colour, surrounded with dense tufts of white shining glassy spicula. Of this and the *C. petasus* and *acutirostratus*, only a single specimen of each was obtained.

Species 174. (Mus. Belcher.)

CHITON FULIGINATUS. *Chit. testâ oblongâ, valdè elevatâ, valvis terminalibus cæterarum areisque lateralibus subirregulariter concentricè striatis, prope marginem incisis, areis centralibus lævibus, sub lente minutissimè reticulatis; sordidè albâ, nigro plus minusve sparsim fuliginatâ; ligamento corneo, angusto, fusco.*

THE SOOTED CHITON. Shell oblong, very elevated, terminal valves and lateral areas of the rest somewhat irregularly concentrically striated, striæ engraved near the margin, central areas smooth or, under the lens, minutely reticulated; dead white, more or less sparingly smeared with black; ligament horny, narrow, brown.

Hab. Korean Archipelago; Belcher.

Of numerous specimens collected at the above-mentioned islands, all are of an uniform dull white, more or less sparingly besooted with black.

Species 175. (Mus. Metcalfe.)

CHITON RUBER. *Chit. testâ ovatâ, valvis concentricè striatis, lævibus, umbonibus subdepresso-rostratis; lutescente, rufo undique maculatâ; ligamento granoso-coriaceo, rufo-marmorato.*

THE RED CHITON. Shell ovate, valves concentrically striated, smooth, umbones somewhat depressly beaked; yellowish, blotched throughout with red; ligament granosely coriaceous, marbled with red.

LOWE (not of Linnæus), Zool. Journ. vol. ii. pl. 5. f. 2.

Hab. Shores of Britain.

Collected by Mr. Metcalfe at Guernsey, but rare.

Species 176. (Mus. Metcalfe.)

CHITON CRINITUS. *Chit. testâ ovatâ, valvis summitate lævibus, subcarinatis, ad latera granatis, granis grandibus planulatis; ligamento corneo crinito, spiculorum cristis munito.*

THE HAIRY CHITON. Shell ovate, valves smooth along the summit, slightly keeled, grained at the sides grains large, flattened; ligament horny, hairy, furnished with tufts of spicula.

PENNANT, British Zoology vol. iv. pl. 39. f. 1.

Chiton fascicularis, Sowerby (not of Linnæus).

Hab. Britain. Weymouth, Lynn, Broadstairs &c.; Metcalfe. Shetland and Orkney Islands; Forbes and M'c Andrew.

The *C. crinitus* is abundantly distributed throughout the shores of the British Isles, whilst the *C. fascicularis* is only found on the south coast and among the Channel Islands. Both occur equally in the Mediterranean.

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Sowerby. del. et lith.

Reeve, imp.

CHITON.

PLATE XXVII.

Species 168. (Mus. Cuming.)

CHITON CIRCUMVALLATUS. *Chit. testâ oblongo-ovatâ, valvis terminalibus cæterarum areisque lateralibus liris concentricis exculptis, centralibus minutissimè reticulatis, valvâ terminali posticâ umbonatâ; nigricante rufâ, nigro maculatâ, ligamento arenaceo, tessellato.*

THE INTRENCHED CHITON. Shell oblong-ovate, terminal valves and lateral areas of the rest sculptured with concentric ridges, central areas very minutely reticulated, posterior terminal valve umbonated; blackish red, spotted with black, ligament arenaceous, tessellated.

Hab. New Zealand.

Approaching *C. longicymba*, but distinguished from that species by the conspicuous concentric ridges with which it is encircled.

Species 178. (Mus. Belcher.)

CHITON SCUTIGER. *Chit. testâ elongatâ, subangustâ, valvis medio lævi-carinatis, subrostratis, utrinque minutè et creberrimè granulatis; peculiariter ustulato-rufâ; ligamento densè setoso, valvarum latera obducto, spiculorum cristis parvis munito.*

THE SHIELD-BEARING CHITON. Shell elongated, narrow, valves smoothly keeled in the middle, slightly beaked, minutely and very closely granulated; peculiarly burnt-red colour; ligament densely bristled, spread over the sides of the valves, and furnished with small tufts of spicula.

ADAMS and REEVE, Moll. Voy. Samarang.

Hab. Island of Quelpart; Korean Archipelago; Adams.

It is somewhat difficult to discriminate between this and the *C. hirudiniformis* beyond noting a difference of colour, except by comparison of specimens in good condition, before the ligamentary portion of the mantle has become dried and contracted: they are, however, distinct, and the simple difference of colour is, in this instance, a character to be relied on.

Species 179. (Mus. Cuming.)

CHITON LÆVIGATUS *Chit. testâ ovatâ, latiusculâ, lævi aut concentricè striatâ, areis lateralibus vix distinctis, valvarum marginibus posticis minutè denticulatis; albidâ, coccineo-rufo variegatâ et maculatâ; ligamento corneo.*

THE SMOOTH CHITON. Shell ovate, rather broad, smooth or concentrically striated, lateral areas scarcely distinguished, posterior edges of the valves minutely denticulated; whitish, blotched and variegated with scarlet red, ligament horny.

FLEMING, Edin. Ency. v. 7. p. 103.

Chiton latus. Lowe.

Hab. Britain; Lowe. West coast of Sweden; Lovan.

Easily distinguished by its scarlet red painting, the denticulated edges of the valves being articulated red and white, whilst the valves are richly tinged with rose-red posteriorly in the interior.

Species 180. (Mus. Cuming.)

CHITON CIRCELLATUS. *Chit. testâ oblongo-ovatâ, valvis posticè subproductis, lævibus, sulcis circularibus peculiariter exsculptis; atrâ; ligamento densè brevisetoso, valvarum latera obsito, spiculorum cristis parvis munito.*

THE CIRCLED CHITON. Shell oblong-ovate, valves somewhat produced posteriorly, smooth, peculiarly sculptured with circular grooves; jet black; ligament densely beset with short bristles, spreading over the sides of the valves and furnished with small tufts of spicula.

ADAMS and REEVE, Moll. Voy. Samarang.

Hab. Island of Quelpart; Korean Archipelego; Adams.

This is the largest of the tufted species, and quite peculiar in its style of sculpture; the valves in all others of this group are minutely granulated, but in this they are smooth, and characterized by a number of fine grooves radiating in concentric order from the umbones.

Species 181. (Mus. Cuming.)

CHITON CUNNINGHAMII. *Chit. testâ oblongo-ovatâ, valvis crassiusculis, undique concentricè liratis, striis elevatis ab umbonibus radiatis, posticâ terminali, retuso-umbonatâ, areis lateralibus vix distinctis; viridi-nigrâ, valvis medio fasciâ fuscâ longitudinaliter pictâ; ligamento corneo.*

CUNNINGHAM'S CHITON. Shell oblong-ovate, valves rather thick, concentrically ridged throughout, radiated from the umbones with raised striæ, posterior

terminal valve retusely umbonated, lateral areas scarcely distinguished; greenish-black, valves longitudinally painted in the middle with a brown band; ligament horny.

Hab. Australia, on the rocks; Cunningham.

This fine shell which I at first thought to be a variety of the *C. piceus*, is certainly distinct from that species; on comparing the descriptions and figures the valves may be observed to differ both in form and sculpture.

It was collected in Australia by the late Mr. Allan Cunningham, a most indefatigable traveller, who has contributed largely to our stores both of zoological and botanical specimens, and I gladly adopt his name already attached to the specimen in manuscript.

Species 90. (Mus. Cuming.)

CHITON SPINULOSUS. *Chit. testâ ovatâ, valvis granulorum liris eximiis undique nitidè exculptis, terminali posticâ umbonatâ; fulvo-spadiceâ, maculâ trigonâ rufâ summitate umbonali utriusque valvæ, valvarum marginibus posticis rufo alboque pulcherrimè articulatis; ligamento corneo, subarenaceo.*

THE SPINULOSE CHITON. Shell ovate, valves neatly sculptured throughout with delicate ridges of granules, posterior terminal valve umbonated; fulvous bay colour, with a triangular dark red spot on the umbonal summit of each valve, posterior edges of the valves very prettily articulated red and white; ligament horny, subarenaceous.

SOWERBY, Conch. Illus. f. 84 and 84 *a*, (not f. 70 and 71).

Hab. ——?

Well characterized by its neatly defined rows of delicate granules and peculiar style of painting.

Species 182. (Fig. 182 and 183, Mus. Cuming.)

CHITON MARGINATUS. *Chit. testâ ovatâ, latiusculâ, sub lente undique minutissimè reticulatâ, areis lateralibus vix distinctis, valvarum marginibus posticis obsoletè minutè denticulatis; albidâ, nigro aut viridi promiscuè variegatâ; ligamento arenaceo, tessellato.*

THE MARGINED CHITON. Shell ovate, rather broad, under the lens very minutely reticulated, lateral areas scarcely distinguished, posterior edges of the valves obsoletely minutely denticulated; whitish, promiscuously variegated with black or green; ligament arenaceous, tessellated.

PENNANT, Brit. Zool. vol. iv. p. 71. pl. 36. f. 2.

Hab. Britian.

The commonest and most variable of the British species.

Figure 154.

Probably a variety only of *C. longicymba.*

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CHITON.

PLATE XXVIII.

(Figures considerably magnified.)

Species 185. (Mus. Cuming.)

CHITON CORRUGATUS. *Chit. testâ ovatâ, valvis terminalibus radiatim costatis, posticâ parvâ, retusâ, areis lateralibus bicostatis, valvis omnibus undique granulato-corrugatis; viridi, nigricante maculatâ; ligamento arenaceo, tessellato.*

THE WRINKLED CHITON. Shell ovate, terminal valves radiately ribbed, posterior small, retuse, lateral areas two-ribbed, all the valves granulosely wrinkled throughout; green, blotched with black; ligament arenaceous, tessellated.

Hab. —— ?

Distinguished by a beautiful surface of minutely wrinkled sculpture, the posterior terminal valve being unusally small whilst the anterior is large and broadly radiately ribbed.

Species 186. (Mus. Cuming.)

CHITON EXIGUUS. *Chit. testâ oblongo-ovatâ, subangustâ, valvis lævibus, sulco utrinque summitatem umbonalem; rufescente, albimaculatâ.*

THE MINUTE CHITON. Shell oblong-ovate, rather narrow, very minute, valves smooth, with a groove on each side the umbonal summit; pale red, mottled with white.

SOWERBY, Pro. Zool. Soc. 1832.

Hab. Lord Hood's Island.

An extremely minute species of which the characters are only to be detected with the aid of a lens of considerable power.

Species 187. (Fig. 187. Mus. Hanley, Fig. 190. Mus. Forbes.)

CHITON HANLEYI. *Chit. testâ oblongo-ovatâ, medio elevatiusculâ, valvis granulis minutis conspicuis, in seriebus longitudinalibus ordinatis, pulcherrimè exculptis, circa umbones lævibus; albidâ aut nigricante tinctâ.*

HANLEY'S CHITON. Shell oblong-ovate, rather elevated in the middle, valves very beautifully sculptured with conspicuous minute granules arranged in longitudinal rows; whitish or stained with black.

BEAN, Thorpe, Brit. Marine Conch. Supp. p. 263. f. 57.

Hab. Britain.

Remarkably distinguished from any of the British *Chitons* by its conspicuous longitudinal rows of granules, which rather approximate in character to those of some of the larger exotic species, *C. luridus* e. g.

Species 188. (Mus. Cuming.)

CHITON COLUBRIFER. *Chit. testâ oblongo-ovatâ, medio elevatiusculâ, valvis terminalibus cæterarum areisque lateralibus peculiariter plano-granulatis, centralibus striis circularibus et obliquis subtilissimè reticulatis; albidâ, nigro maculatâ; ligamento squamoso.*

THE SNAKE-MARKED CHITON. Shell oblong-ovate, somewhat elevated in the middle, terminal valves and lateral areas of the rest peculiarly flatly grained, central areas very finely reticulated with circular and oblique striæ; whitish, blotched with black; ligament scaly.

Hab. —— ?

Approximating somewhat in the style of its sculpture to the *C. rugulatus.*

Species 189. (Mus. Cuming.)

CHITON PUSILLUS. *Chit. testâ oblongo-ovatâ, subangustâ, minimâ, medio elevatiusculâ, valvis lævibus, areis centralibus minutissimè punctulatis, valvâ posticâ terminali conspicuè umbonatâ; albidâ, rufescente subindistinctè tinctâ.*

THE SMALL CHITON. Shell oblong-ovate, rather narrow, very small, somewhat elevated in the middle, valves smooth, central areas very minutely punctured, posterior terminal valve conspicuously umbonated; whitish, rather indistinctly tinged with light red.

SOWERBY, Pro. Zool. Soc. 1832.

Hab. Pacasmayo, coast of Peru (found on a coral reef in seventeen fathoms water, nine miles from land); Cuming.

The umbonated summit of the posterior terminal valve is somewhat unusually inclined backwards in this little species.

Species 191. (Mus. Hanley.)

CHITON CINEREUS. *Chit. testâ ovatâ, valvis terminalibus cæterarum areisque lateralibus decussatim striatis et basem versus concentricè sulcatis areis centralibus sub lente subtilissimè reticulatis; albidâ, cinereo nebulosâ et lineatâ; ligamento minutè squamoso.*

THE ASHY CHITON. Shell ovate, terminal valves and lateral areas of the rest decussately striated and concentrically grooved towards the base, central areas very minutely reticulated under the lens; whitish, clouded and lineated with ash colour; ligament minutely scaled.

LINNÆUS, Syst. Nat. p. 1106.

Chiton cimex, Chemnitz.

Var. *C. albus*, Montagu.

C. asellus and *aselloides*, Lowe.

Hab. Britain.

The most marked variety of this species appears to be that in which the dark painting is disposed in longitudinal lines or stripes.

Species 192. (Mus. Cuming.)

CHITON VIRGATUS. *Chit. testâ oblongo-ovatâ, minutâ, valvis lævibus aut sub lente subtilissimè reticulatis; cæruleo-viridi et luteo pulcherrimè maculatâ et virgatâ; ligamento minutissimè squamoso, marmorato.*

THE STRIPED CHITON. Shell oblong-ovate, minute, valves smooth or, under the lens, very finely reticulated; beautifully mottled and striped with blueish green and yellow; ligament very minutely scaly, marbled.

Hab. Port Lincoln, Australia.

A very minute species distinguished by the same rich display of colours which usually characterizes those of Australian birth.

Species 194. (Mus. Cuming.)

CHITON INCARNATUS. *Chit. testâ ovatâ, valvis lævibus, umbonibus subrostratis, areis lateralibus subobscurè concentricè striatis, valvâ terminali posticâ subretusâ; incarnato-rosaceâ; ligamento squamuloso, rufescente alboque marmorato.*

THE FLESH-TINTED CHITON. Shell ovate, valves smooth, umbones slightly beaked, lateral areas somewhat obscurely concentrically striated, posterior terminal valve rather blunt; fleshy pink, ligament finely scaled, marbled with pale red and white.

Hab. ——?

Not being able to refer this shell to any of the previous species, I venture to describe it as new.

Note. During the progress of this monograph, a Paper has appeared in the Proceedings Zool. Soc. May, 1847, by Mr. J. E. Gray, in which the author proposes to divide *Chiton* and *Chitonellus* into fifteen genera, according to variations of form, colour, and sculpture, and the length and position of the gills; the same characters indicated by De Blainville for the sectional arrangement of the species in Dict. Sci. Nat., 1825. The vast number of species since acquired enabling Mr. Gray to enlarge upon the plan of subdivision of the learned author of the 'Traitè de Malacologie,' he proposes to elevate each section there notified to the rank of a genus, with the following names:—*Chiton, Tonicia, Acanthopleura, Schizochiton, Corephium, Plaxiphora, Onithochiton, Enoplochiton, Mopalia, Katharina, Cryptochiton, Cryptoconchus, Amicula, Acanthochites*, and *Chitonellus*.

None of these genera, which, it will be observed, are of very unequal rank, can be said to be founded on any new consideration of the animal, or upon any other character, than that exhibited in the dried specimens represented in this monograph. It has long been decided that variations of colour and sculpture are quite inadequate to the formation of genera, and, as our knowledge of "the length and position of the gills" is still limited to the observations of De Blainville on the Lamarckian types of *Chiton* and *Chitonellus*, any disturbance of the nomenclature should be avoided.

It is much to be regretted that a desire to taste prematurely of the pleasures of generalization should so frequently elicite the sudden apprehension of characters for generic purposes, which, in reality, are no more than the simplest modifications of specific affinity.

Species 191. (Mus. Hanley.)

CHITON CINEREUS. *Chit. testâ ovatâ, valvis terminalibus ceterarum areisque lateralibus decussatim striatis et basem versus concentricè sulcatis areis centralibus sub lente subtilissimè reticulatis; albidâ, cinereo nebulosâ et lineatâ; ligamento minutè squamoso.*

THE ASHY CHITON. Shell ovate, terminal valves and lateral areas of the rest decussately striated and concentrically grooved towards the base, central areas very minutely reticulated under the lens; whitish, clouded and lineated with ash colour; ligament minutely scaled.

LINNÆUS, Syst. Nat. p. 1106.

Chiton cimex, Chemnitz.

Var. *C. albus*, Montagu.

C. asellus and *aselloides*, Lowe.

Hab. Britain.

The most marked variety of this species appears to be that in which the dark painting is disposed in longitudinal lines or stripes.

Species 192. (Mus. Cuming.)

CHITON VIRGATUS. *Chit. testâ oblongo-ovatâ, minutâ, valvis lævibus aut sub lente subtilissimè reticulatis; cæruleo-viridi et luteo pulcherrimè maculatâ et virgatâ; ligamento minutissimè squamoso, marmorato.*

THE STRIPED CHITON. Shell oblong-ovate, minute, valves smooth or, under the lens, very finely reticulated; beautifully mottled and striped with blueish green and yellow; ligament very minutely scaly, marbled.

Hab. Port Lincoln, Australia.

A very minute species distinguished by the same rich display of colours which usually characterizes those of Australian birth.

Species 194. (Mus. Cuming.)

CHITON INCARNATUS. *Chit. testâ ovatâ, valvis lævibus, umbonibus subrostratis, areis lateralibus subobscurè concentricè striatis, valvâ terminali posticâ subretusâ; incarnato-rosaceâ; ligamento squamuloso, rufescente alboque marmorato.*

THE FLESH-TINTED CHITON. Shell ovate, valves smooth, umbones slightly beaked, lateral areas somewhat obscurely concentrically striated, posterior terminal valve rather blunt; fleshy pink, ligament finely scaled, marbled with pale red and white.

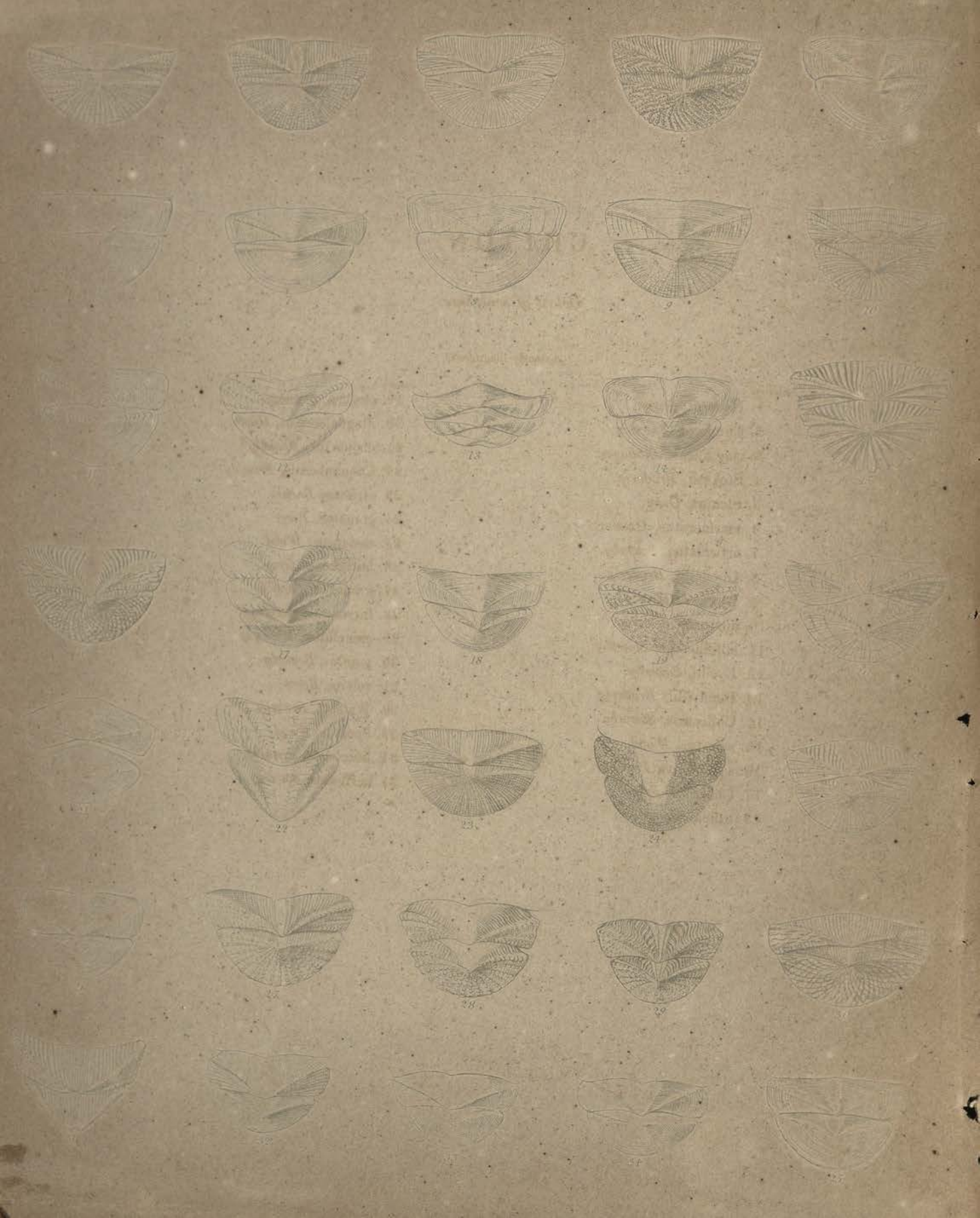
Hab. ——?

Not being able to refer this shell to any of the previous species, I venture to describe it as new.

Note. During the progress of this monograph, a Paper has appeared in the Proceedings Zool. Soc. May, 1847, by Mr. J. E. Gray, in which the author proposes to divide *Chiton* and *Chitonellus* into fifteen genera, according to variations of form, colour, and sculpture, and the length and position of the gills; the same characters indicated by De Blainville for the sectional arrangement of the species in Dict. Sci. Nat., 1825. The vast number of species since acquired enabling Mr. Gray to enlarge upon the plan of subdivision of the learned author of the 'Traitè de Malacologie,' he proposes to elevate each section there notified to the rank of a genus, with the following names:—*Chiton, Tonicia, Acanthopleura, Schizochiton, Corephium, Plaxiphora, Onithochiton, Enoplochiton, Mopalia, Katharina, Cryptochiton, Cryptoconchus, Amicula, Acanthochites*, and *Chitonellus*.

None of these genera, which, it will be observed, are of very unequal rank, can be said to be founded on any new consideration of the animal, or upon any other character, than that exhibited in the dried specimens represented in this monograph. It has long been decided that variations of colour and sculpture are quite inadequate to the formation of genera, and, as our knowledge of "the length and position of the gills" is still limited to the observations of De Blainville on the Lamarckian types of *Chiton* and *Chitonellus*, any disturbance of the nomenclature should be avoided.

It is much to be regretted that a desire to taste prematurely of the pleasures of generalization should so frequently elicite the sudden apprehension of characters for generic purposes, which, in reality, are no more than the simplest modifications of specific affinity.



CHITON.

Detail of sculpture.

(variously magnified.)

Species.

1. Barnesii, *Gray.*
2. Cumingii, *Frembly.*
3. magnificus, *Deshayes.*
4. Stokesii, *Broderip.*
5. Siculus, *Gray.*
6. marmoratus, *Gmelin.*
7. articulatus, *Sowerby.*
8. Goodallii, *Broderip.*
9. Bowenii, *King.*
10. australis, *Sowerby.*
11. albilineatus, *Sowerby.*
12. Lyellii, *Sowerby.*
13. Blainvillii, *Broderip.*
14. Chiloensis, *Sowerby.*
15. sulcatus, *Wood.*
16. squamosus, *Linnæus.*
17. Chilensis, *Frembly.*
18. tulipa, *Quoy.*

Species.

19. elegans, *Frembly.*
20. Magdalenensis, *Hinds.*
21. disjunctus, *Frembly.*
22. Coquimbensis, *Frembly.*
23. striatus, *Barnes.*
24. granatus, *Reeve.*
25. castaneus, *Wood.*
26. fastigiatus, *Gray.*
27. granosus, *Frembly.*
28. foveolatus, *Sowerby.*
29. crenulatus, *Broderip.*
30. patulus, *Sowerby.*
31. volvox, *Reeve.*
32. Watsoni, *Sowerby.*
33. lineatus, *Wood.*
34. lineolatus, *Frembly.*
35. lævigatus, *Sowerby.*

Sowerby del. et sculpt.

CHITON.

Detail of sculpture.

(variously magnified.)

Species.

36. æreus, *Reeve.*
37. Hennahii, *Gray.*
38. Swainsoni, *Sowerby.*
39. fulvus, *Wood.*
40. elongatus, *Reeve.*
41. violaceus, *Quoy.*
42. limaciformis, *Sowerby.*
43. incisus, *Sowerby.*
44. divergens, *Reeve.*
45. alatus, *Sowerby.*
46. acutiliratus, *Reeve.*
47. spiculosa, *Reeve.*
48. setiger, *King.*
49. aculeatus, *Linnæus.*
50. Peruvianus, *Lamarck.*
51. spinosus, *Bruguière.*
52. brevispinosus, *Sowerby.*
53. fascicularis, *Linnæus.*

Species.

54. hirudiniformis, *Sowerby.*
55. Sitkensis, *Reeve.*
56. porphyreticus, *Reeve.*
57. monticularis, *Quoy.*
58. Zelandicus, *Quoy.*
59. amiculatus, *Pallas.*
60. chlamys, *Reeve.*
61. tunicatus, *Wood.*
62. Emersonianus, *Couthouy.*
63. cerasinus, *Chemnitz.*
64. marmoreus, *Chemnitz.*
65. gigas, *Chemnitz.*
66. scarabæus, *Reeve.*
67. Hindsii, *Sowerby.*
68. glaucus, *Gray.*
69. punctiulatus, *Reeve.*
70. piceus, *Gmelin.*

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Sowerby del. et sculp.

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CHITON.

Detail of sculpture.

(variously magnified.)

Species.

71. fulgetrum, *Reeve.*
72. linter, *Chemnitz.*
73. aquatilis, *Reeve.*
74. petholatus, *Sowerby.*
75. spiniger, *Sowerby.*
76. occidentalis, *Reeve.*
77. assimilis, *Reeve.*
78. contractus, *Reeve.*
79. pictus, *Reeve.*
80. Sowerbyi, *Reeve.*
81. scabriculus, *Sowerby.*
82. Columbiensis, *Sowerby.*
83. reticulatus, *Reeve.*
84. pellis-serpentis, *Quoy.*
85. luridus, *Sowerby.*
86. graniferus, *Sowerby.*
87. undulatus, *Quoy.*
88. pertusus, *Reeve.*

Species.

89. Californicus, *Nuttall.*
90. spinulosus, *Gray.*
91. textilis, *Gray.*
92. pallidus, *Reeve.*
93. truncatus, *Sowerby.*
94. Inca, *Reeve.*
95. concentricus, *Reeve.*
96. dispar, *Sowerby.*
97. productus, *Reeve.*
98. sanguineus, *Reeve.*
99. retusus, *Sowerby.*
100. setosus, *Sowerby.*
101. cælatus, *Reeve.*
102. ustulatus, *Reeve.*
103. atratus, *Sowerby.*
104. metallicus, *Reeve.*
105. Grayi, *Sowerby.*

CHITON.

Detail of sculpture.

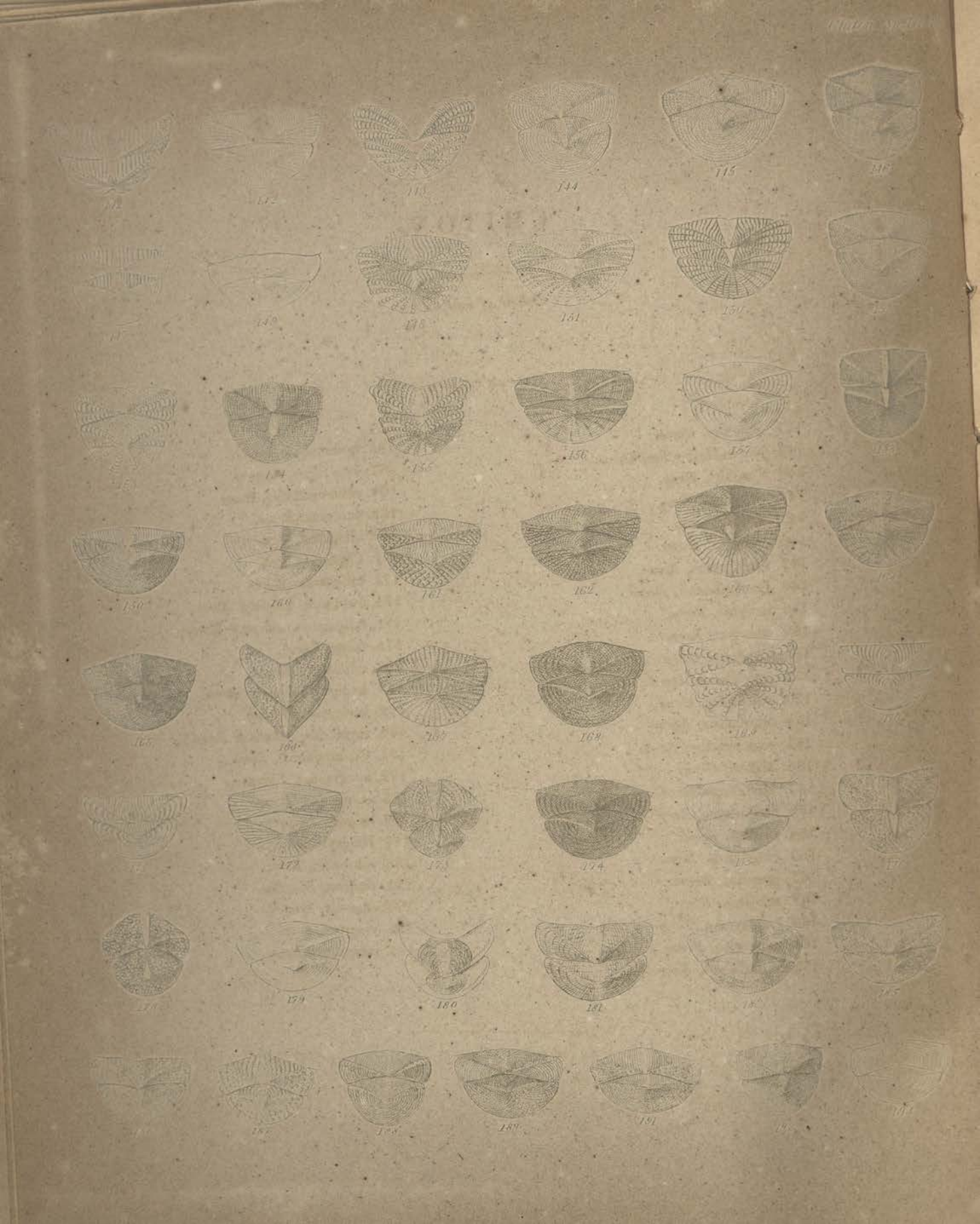
(variously magnified.)

Species.

106. scaber, *Reeve.*
107. decussatus, *Reeve.*
108. labeculatus, *Reeve.*
109. astriger, *Reeve.*
110. lyratus, *Sowerby.*
111. Proteus, *Reeve.*
112. fortiliratus, *Reeve.*
113. clathratus, *Reeve.*
114. petasus, *Reeve.*
115. rugosus, *Gray.*
116. Janeirensis, *Gray.*
117. floccatus, *Sowerby.*
118. rugulatus, *Sowerby.*
119. roseus, *Sowerby.*
120. crispus, *Reeve.*
121. picus, *Reeve.*
122. Rissoi, *Payraudeau.*
123. Adelaidensis, *Reeve.*

Species.

124. ciliatus, *Sowerby.*
125. lævis, *Pennant.*
126. virescens, *Reeve.*
127. coarctatus, *Sowerby.*
128. Coreanicus, *Reeve.*
129. punctulatissimus, *Sowerby.*
130. catenulatus, *Sowerby.*
131. pallidulus, *Reeve.*
132. pulcherrimus, *Sowerby.*
133. pectinatus, *Sowerby.*
134. Sueziensis, *Reeve.*
135. laqueatus, *Reeve.*
136. Collei, *Gray.*
137. acutirostratus, *Reeve.*
138. Guildingii, *Reeve.*
139. nobilis, *Gray.*
140. virgulatus, *Sowerby.*



CHITON.

Detail of sculpture.

(Variously magnified.)

Species.

141. cimolius, *Reeve.*
142. Novæ-Hollandiæ, *Gray.*
143. Sinclairi, *Gray.*
144. striolatus, *Gray.*
145. castus, *Reeve.*
146. crocinus, *Reeve.*
147. illuminatus, *Reeve.*
148. Dieffenbachii, *Reeve.*
149. insignis, *Reeve.*
150. Stangeri, *Reeve.*
151. Capensis, *Gray.*
152. cancellatus, *Leach.*
153. pulchellus, *Gray.*
154. inquinatus, *Reeve.*
155. segmentatus, *Reeve.*
156. Milleri, *Gray.*
157. Mediterraneus, *Gray.*
158. carinulatus, *Reeve.*
159. catillus, *Reeve.*
160. cingillatus, *Reeve.*
161. proprius, *Reeve.*
162. arbutum, *Reeve.*
163. longicymba, *De Blainville.*
164. muscarius, *Reeve.*
165. lentiginosus, *Sowerby.*

Species.

166. hastatus, *Sowerby.*
167. Luzonicus, *Sowerby.*
168. circumvallatus, *Reeve.*
169. antiquus, *Reeve.*
170. dissimilis, *Reeve.*
171. Cajetanus, *Poli.*
172. caliginosus, *Reeve.*
173. formosus, *Adams & Reeve.*
174. fuliginatus, *Adams & Reeve.*
175. ruber, *Lowe.*
176. crinitus, *Pennant.*
178. scutiger, *Adams & Reeve.*
179. lævigatus, *Fleming.*
180. circellatus, *Adams & Reeve.*
181. Cunninghamii, *Reeve.*
182. marginatus, *Pennant.*
185. corrugatus, *Reeve.*
186. exiguus, *Sowerby.*
187. Hanleyi, *Bean.*
188. colubrifer, *Reeve.*
189. pusillus, *Sowerby.*
190. cinereus, *Linnæus.*
192. virgatus, *Reeve.*
194. incarnatus, *Reeve.*

CHITON.

	Plate.	Species.
aculeatus, *Linnæus*	IX.	49
acutiliratus, *Reeve*	VIII.	46
acutirostratus, *Adams & Reeve*	XXVI.	137
Adelaidensis, *Reeve*	XIX.	123
æreus, *Reeve*	VII.	36
alatus, *Sowerby*	VIII.	45
albilienatus, *Sowerby*	II.	11
amiculatus, *Pallas*	XI.	59
antiquus, *Reeve*	XXV.	169
aquatilis, *Reeve*	XIII.	73
arbutum, *Reeve*	XXIV.	162
articulatus, *Sowerby*	II.	7
assimilis, *Reeve*	XIV.	77
astriger, *Reeve*	XVIII.	109
atratus, *Sowerby*	XVII.	103
australis, *Sowerby*	II.	10
Barnesii, *Gray*	I.	1
bicolor, Adams	XVIII.	115
biramosus, Quoy	IX.	48
Blainvillii, *Broderip*	III.	13
Bowenii, *King*	II.	9
brevispinosus, *Sowerby*	IX.	52
cælatus, *Reeve*	XVII.	101
Cajetanus, *Poli*	XXV.	171
Californicus, *Nuttall*	XVI.	89
caliginosus, *Reeve*	XXV.	172
cancellatus, *Leach*	XXIII.	152
Capensis, *Gray*	XXII.	151
carinulatus, *Reeve*	XXIII.	158
castaneus, Quoy	VI.	32
castaneus, *Wood*	V.	25
castus, *Reeve*	XXII.	145
catenulatus, *Sowerby*	XX.	130
catillus, *Reeve*	XXIII.	159
cerasinus, *Chemnitz*	XII.	63
Chilensis, *Frembly*	III.	17
Chiloensis, *Sowerby*	III.	14
chlamys, *Reeve*	XI.	60
ciliatus, *Sowerby*	XIX.	124
cimolius, *Reeve*	XXI.	141
cinereus, *Linnæus*	XXVIII.	191
cingillatus, *Reeve*	XXIII.	160
circellatus, *Adams & Reeve*	XXVII.	180
circumvallatus, *Reeve*	XXVII.	168
clathratus, *Reeve*	XVIII.	113
coarctatus, *Sowerby*	XX.	127
Colliei, *Gray*	XXI.	136
colubrifer, *Reeve*	XXVIII.	188
Columbiensis, *Sowerby*	XV.	82
concentricus, *Reeve*	XVI.	95
contractus, *Reeve*	XV.	78

	Plate.	Species.
Coreanicus, *Adams & Reeve*	XXVI.	128
corrugatus, *Reeve*	XXVIII.	185
Coquimbensis, *Frembly*	IV.	22
crenulatus, *Broderip*	VI.	29
crinitus, *Pennant*	XXVI.	176
crispus, *Reeve*	XIX.	120
crocinus, *Reeve*	XXII.	146
Cumingii, *Frembly*	I.	2
Cunninghamii, *Reeve*	XXVII.	181
cymbiola, Sowerby	III.	18
decussatus, *Reeve*	XVIII.	107
Dieffenbachii, *Reeve*	XXII.	148
disjunctus, *Frembly*	IV.	21
dissimilis, *Reeve*	XXV.	170
dispar, *Sowerby*	XVIII.	96
divergens, *Reeve*	VIII.	44
elegans, *Frembly*	IV.	12
Elenensis, Sowerby	XIX.	116
elongatus, *Reeve*	VIII.	40
Emersonianus, *Couthouy*	XI.	62
evanidus, Sowerby	II.	10
excavatus Gray	VI.	28
exiguus, *Sowerby*	XXVIII.	196
fasciatus, Gmelin	XII.	64
fascicularis, *Linnæus*	X.	53
fastigiatus, *Gray*	V.	26
floccatus, *Sowerby*	XIX.	117
fortiliratus, *Reeve*	XVIII.	112
formosus, *Adams & Reeve*	XXVI.	173
foveolatus, *Sowerby*	VI.	28
Fremblii, Broderip	IX.	48
fulgetrum, *Reeve*	XIII.	71
fuliginatus, *Adams & Reeve*	XXVI.	174
fulvus, *Wood*	VII.	39
gigas, *Chemnitz*	XII.	65
glaucus, Gray	XIII.	68
Goodallii, *Broderip*	II.	8
granatus, *Reeve*	V.	24
graniferus, *Sowerby*	XV.	86
granosus, *Frembly*	V.	27
Grayi, *Sowerby*	XVII.	105
Guildingii, *Reeve*	XXI.	138
Hanleyi, *Bean*	XXVIII.	187
hastatus, *Sowerby*	XXV.	166
Hennahii, *Gray*	VII.	37
Hindsii, *Sowerby*	XII.	67
hirudiniformis, *Sowerby*	X.	54
illuminatus, *Reeve*	XXII.	147
incarnatus, *Reeve*	XXVIII.	194
Incii, *Reeve*	XVI.	94
incisus, *Sowerby*	VIII.	34

	Plate.	Species.
inquinatus, *Reeve*	XXIII.	154
insignis, *Reeve*	XXII.	149
Janeirensis, *Gray*	XIX.	116
labeculatus, *Reeze*	XVIII.	108
lævigatus, *Fleming*	XXVII.	178
lævigatus, *Sowerby*	VII.	35
lævis, *Pennant*	XXVI	125
laqueatus, *Reeve*	XX.	135
latus, Lowe	XXVII.	179
latus, Sowerby	I.	3
lentiginosus, *Sowerby*	XXIV.	165
limaciformis, *Sowerby*	VIII.	42
lineatus, *Wood*	VII.	33
lineolatus, *Frembly*	VII.	34
linter, *Chemnitz*	XIII.	72
longicymba, *De Blainville*	XXIV.	163
luridus, *Sowerby*	XV.	85
Luzonicus, *Sowerby*	XXV.	167
Lyellii, *Sowerby*	III.	12
lyratus, *Sowerby*	XVIII.	110
Magdalenensis, *Hinds*	IV.	20
magnificus, *Deshayes*	I.	3
marginatus, *Pennant*	XXVII.	182
marmoratus, *Gmelin*	II.	6
marmoreus, *Chemnitz*	XII.	64
Mediterraneus, *Gray*	XXIII.	157
metallicus, *Reeve*	XVII.	104
Milleri, *Gray*	XXIII.	156
monticularis, *Quoy*	X.	57
muscarius, *Reeve*	XXIV.	164
nobilis, *Gray*	XXI.	139
Novæ-Hollandiæ, *Gray*	XXI.	142
occidentalis, *Reeve*	XIV.	76
olivaceus, Frembly	I.	3
pallidulus, *Reeve*	XX.	131
pallidus, *Reeve*	XVI.	92
patulus, *Sowerby*	VI.	30
pectinatus, *Sowerby*	XXVI.	133
pellis-serpentis, *Quoy*	XV.	84
pertusus, *Reeve*	XVI.	88
Peruvianus, *Lamarck*	IX.	50
petasus, *Adams & Reeve*	XXVI.	114
petholatus, *Sowerby*	XIV.	74
piceus, *Gmelin*	XIII.	70
pictus, *Reeve*	XV.	79
picus, *Reeve*	XXV.	121
Polii, Deshayes	II.	5
porphyreticus, *Reeve*	X.	56
productus, *Reeve*	XVII.	97
proprius, *Reeve*	XXIV.	161
Proteus, *Reeve*	XVIII.	111
pulchellus, *Gray*	XXIII.	153
pulcherrimus, *Sowerby*	XX.	132
puncticulatus, *Reeve*	XIII.	69
punctulatissimus, *Sowerby*	XX.	129
pusillus, *Sowerby*	XXVIII.	189
Quoyii, *Deshayes*	XIII.	68
reticulatus, *Reeve*	XV.	83
retusus, *Sowerby*	XVII.	99
Rissoi, Payraudeau	XIX.	122
roseus, *Sowerby*	XXV.	119
ruber, *Lowe*	XXVI.	175
rugosus, *Gray*	XVIII.	115
rugulatus, *Sowerby*	XIX.	118
sanguineus, *Reeve*	XVII.	98
scaber, *Reeve*	XVII.	106
scabriculus, *Sowerby*	XV.	81
scarabæus, *Reeve*	XII.	66
sculptus, *Sowerby*	XXVI.	177
scutiger, *Adams & Reeve*	XXVII.	178
segmentatus, *Reeve*	XXIII.	155
setiger, *King*	IX.	48
setosus, *Sowerby*	XVII.	100
setosus, Wood	XXI.	138
Siculus, *Gray*	II.	5
Sinclairi, *Gray*	XXII.	143
Sitkensis, *Reeve*	X.	55
Sowerbyanus,	XV.	80
spiculosa, *Reeve*	IX	47
spiniferus, Frembly	IX.	49
spiniger, *Sowerby*	XIV.	75
spinosus, *Bruguière*	IX.	51
spinulosus, *Sowerby*	XXVII.	90
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Stangeri, *Reeve*	XXII.	150
Stokesii, *Broderip*	I.	4
stramineus, Sowerby	XX.	126
striatus, *Barnes*	I.	23
striolatus, *Gray*	XXII.	144
subfuscus, Sowerby	I.	23
Sueziensis, *Reeve*	XX.	134
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Swainsoni, *Sowerby*	VII.	38
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tulipa, *Quoy*	III.	18
tunicatus, *Wood*	XI.	61
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ustulatus, *Reeve*	XVII.	102
vestitus, Sowerby	XI.	59
violaceus, *Quoy*	VIII.	41
virescens, *Reeve*	XX.	126
virgatus, *Reeve*	XXVIII.	192
virgulatus, *Sowerby*	XXI.	140
viridis, Quoy	XIII.	68
volvox, *Reeve*	VI.	31
Watsoni, *Sowerby*	VI.	32
Zelandicus, *Quoy*	XI.	58

MONOGRAPH

OF THE GENUS

CHITONELLUS.

"Or under rocks their food
In jointed armour watch."—*Milton.*

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CHITONELLUS.

PLATE I.

Genus CHITONELLUS, *Lamarck*.

Testa octovalvis, valvis longitudinaliter oblongis, sejunctis, apophysibus valdè productis, medio pallii elongati incrassati infixis, valvis anticè apropinquantibus, posticè remotis.

Shell eight-valved, valves longitudinally oblong, isolated, with the apophyses very much produced, infixed along the middle of the mantle which is very thick and elongated, valves approximating anteriorly, remote posteriorly.

The *Chitonelli* says M. Deshayes "differ in no respect from the *Chitons*, and the characters which serve to distinguish them are so lightly estimated by naturalists, that they are only admitted by the majority as a subgenus or section of the parent genus." The *Chitonelli* may resemble the *Chitons* in their internal organization, but in the condition of the mantle, the structure and disposition of the shell, and in habit, they differ materially. The mantle is very thick and fleshy, peculiarly elongated, sometimes covered with a harsh down, but mostly tough and leathery; it is invariably destitute of any horny cartilaginous part and is never furnished with any spines, bristles, or calcareous armature. The valves of the shell are of a longitudinally oblong form, with the inner posteriorly projecting plates or apophyses very much produced and firmly imbedded within the substance of the mantle; sustained by these alone they are perfectly isolated from one another, far removed posteriorly, but approximating towards the head, where they are often much crowded by the friction arising from the animal's propensity for thrusting itself into holes and crevices.

The *Chitonelli* are very singular in their habits and are rarely found to associate with *Chitons*; in Chili and along the whole south-west coast of America, abounding with that genus to the extent of some fifty or sixty species, not a single *Chitonellus* is known to exist; and in the Philippine Islands where there are but few *Chitons*, Mr. Cuming collected the *C. fasciatus* in plenty and of extraordinary dimensions. They were found dwelling in holes and cavities either of natural formation or bored by other mollusks, into which they force themselves by attenuating their bodies in a manner truly surprising. At the Island of Zebu, where Mr. Cuming collected a considerable number, they live partially or entirely imbedded in holes and circuitous crevices in the coral rocks, sometimes turning completely at right angles and at angles again; those that were only partially imbedded having attenuated and forced themselves into a smaller hole than was adequate to contain them, the posterior part of the body hung down fat and swollen, and invariably separated from the anterior half whenever any force was used to draw the animal from its hiding place. Mr. Cuming did not find the *Chitonelli* under any other circumstances, and could only obtain specimens entire by splitting the masses of coral in which they were imbedded, attenuated in many instances to a foot or more in length.

Capt. Sir Edward Belcher, and his Assistant Surgeon, Mr. Adams, collected the same species of smaller size in the Korean Archipelago in the Yellow Sea; it was found by these zealous travellers in company with *Chitons* but noticed to be of locomotive habits; on lifting a stone to which a *Chitonellus* might be attached, it was observed to crawl away at about the pace of the common Garden Snail in search of retirement.

Species 1. (Mus. Cuming.)

CHITONELLUS LÆVIS. *Chit. testâ valvis latiusculis, posticè productis, approximatis, undique reclinantibus, lævibus, ad latera subtiliter granulatis; albidâ, rufo triradiatâ; pallio scabro.*

THE SMOOTH CHITONELLUS. Shell with the valves rather broad, produced, approximating, reclining one upon the other throughout, smooth, finely granulated at the sides; whitish, with three red rays, mantle rough.

LAMARCK, Anim. sans vert. (Deshayes's edit.) vol. vii. p. 481. (not of De Blainville).
Chitonellus strigatus, Sowerby.

Hab. Australia.

It is impossible to indentify Lamarck's species of *Chitonellus* with any certainty, but this assuredly accords better with his description of *C. lævis* than any that I have met with.

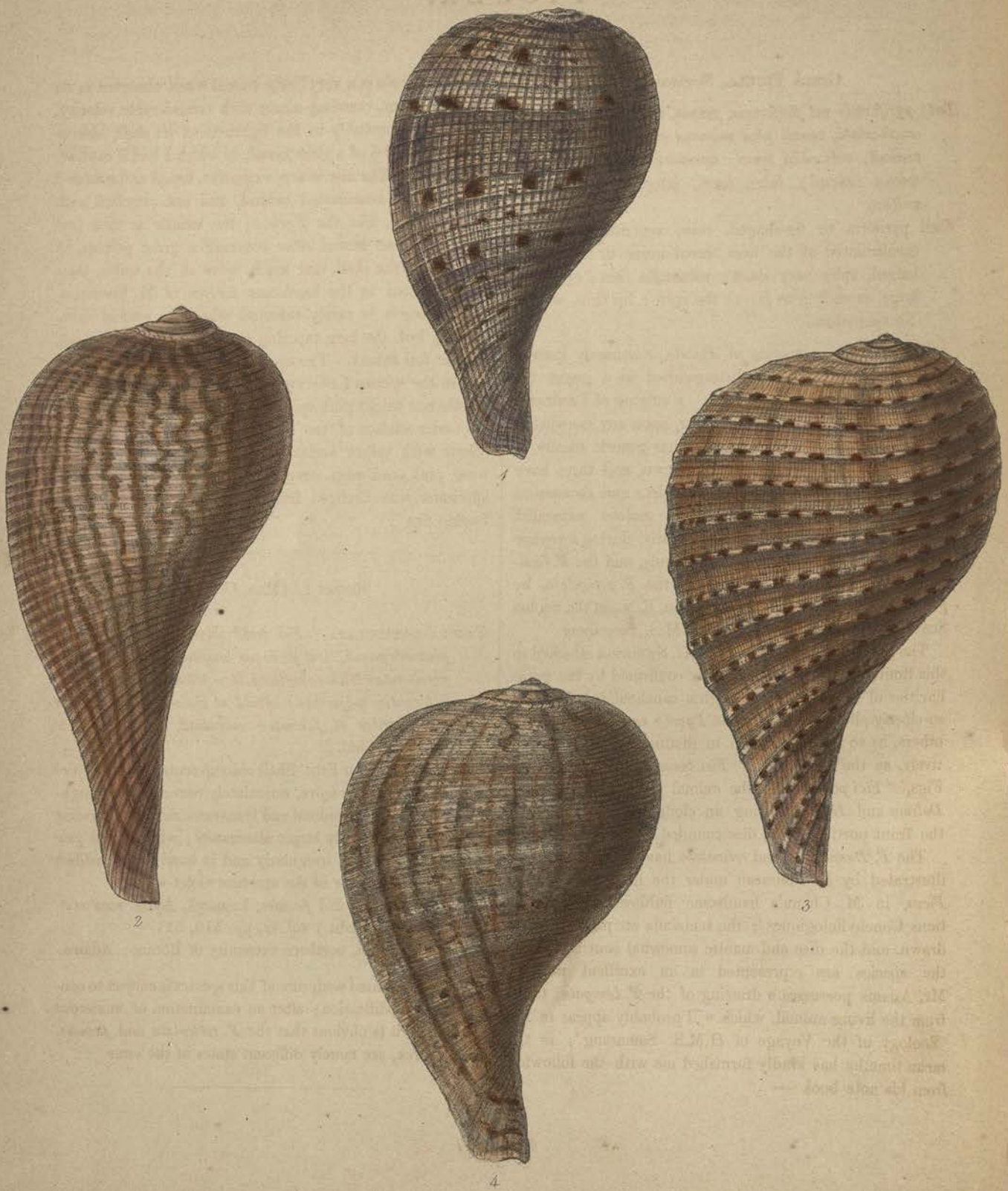
Species 2. (Fig. *a* and *b*. Mus. Cuming.)

CHITONELLUS FASCIATUS. *Chit. testâ valvis posticis remotis, oblongo-ovatis, concentricè sulcatis, anticis approximantibus, lævibus; lutescente-albidâ rufo medio tinctâ; pallio valdè incrassato, elongato, tumido, lutescente-viridi, fusco-nigricante variè fasciato.*

THE BANDED CHITONELLUS. Shell with the posterior valves remote, oblong-ovate, concentrically grooved, the anterior approximating, smooth; yellowish white, stained in the middle with red; mantle very thick, elongated, swollen, yellowish green variously banded with brownish black.

QUOY and GAIMARD, 'Voy. de l'Astrolabe,' Zool. vol. iii. p. 408, pl. 73. f. 21 to 29.
Chitonellus lævis, De Blainville.

Hab. Tonga-Taboo, Friendly Islands; Quoy and Gaimard.



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Sowerby, del. et Lith.

Reeve, imp.

FICULA.

PLATE I.

Genus FICULA, *Swainson.*

Testa pyriformis vel ficiformis, tenuis, ventricosa, basi late canaliculata, canali plus minusve elongato, spirâ brevissimâ; columellâ tenui; aperturâ amplâ, usque ad spiram extensâ; labro tenui, integro. Operculum nullum.

Shell pyriform or fig-shaped, thin, ventricose, broadly canaliculated at the base, canal more or less prolonged, spire very short; columella thin; aperture large, extending as far as the spire; lip thin, entire. No operculum.

The Lamarckian species of *Pyrula*, commonly known as 'The Figs' were first distinguished as a genus by Mr. Swainson in his 'Malacology', a volume of Lardner's 'Cyclopedia'; founded, not, however, upon any knowledge of the soft parts, but upon the uniform generic affinity of the shells. Only four species are known, and three have been lately taken alive; the *F. reticulata* and *Dussumieri* were collected by M. Rousseau, a zealous naturalist attached to the Jardin des Plantes, Paris, during a voyage to Madagascar and the Seychelle Islands, and the *F. lævigata* was dredged, together with the *F. reticulata*, by Mr. Arthur Adams, Assistant Surgeon, R.N., in the Sooloo Sea during the recent voyage of H.M.S., Samarang.

The generic importance which Mr. Swainson attached to this limited group, has been fully confirmed by the peculiarities of the animal; although a canaliculated shell and so closely allied in form to the *Pyrulæ carica, spirata* and others, as to induce Martini to distinguish them respectively, as the Light Figs, "*Fici tenues*", and the Heavy Figs, "*Fici ponderosi*", the animal approaches rather to *Dolium* and *Harpa*, having an elongated proboscis with the front portion of the disc rounded and lobed.

The *F. Dussumieri* and *reticulata* have been beautifully illustrated by M. Rousseau under the new generic name *Ficus*, in M. Chenu's handsome publication, 'Illustrations Conchyliologiques'; the tentacula are partially withdrawn, and the disc and mantle somewhat contracted, but the species are represented in an excellent manner. Mr. Adams possesses a drawing of the *F. lævigata*, taken from the living animal, which will probably appear in the 'Zoology of the Voyage of H.M.S. Samarang'; in the mean time he has kindly furnished me with the following from his note book:—

"The *Ficula* is a very lively animal when observed in its native element, crawling along with considerable velocity, and, owing probably to the lightness of its shell, able to ascend the sides of a glass vessel, in which I had it captive, with facility. The disc is very extensive, broad and rounded in front and acuminated behind, and not provided with an operculum, like the *Pyrulæ*; the mantle is thin and extends in two lateral lobes covering a great portion of the sides of the shell, and much more in the water, than is represented in the handsome figures of M. Rousseau. The proboscis is rarely exserted when the animal is in motion, but the long tapering tentacles are stretched out to their full extent. The eyes are rather large and black.

"In the species I observed (*Ficula lævigata*, Reeve) the mantle was bright pink spotted with white and lighter pink, the under surface of the disc being of a dark chocolate colour with yellow scattered spots; the head and neck were pink and also covered with yellow spots. The specimen was dredged from thirty-five fathoms in the Sooloo Sea".

Species 1. (Mus. Cuming.)

FICULA RETICULATA. *Fic. testâ oblongo-ventricosâ, spirâ plano-depressâ, liris striisque longitudinalibus et transversis reticulatim cancellatâ, liris transversis plerumque alternatim majoribus; albidâ et violascente, rufo-fusco irregulariter et fasciatim maculatâ, aperturæ fauce violaceo-albidâ.*

THE RETICULATED FIG. Shell oblong-ventricose, flatly depressed at the spire, reticulately cancellated throughout with longitudinal and transverse ridges, transverse ridges generally larger alternately; whitish and pale violet, spotted irregularly and in bands with reddish brown, interior of the aperture violet-white.

Pyrulæ reticulata and *ficoides*, Lamarck, Anim. sans vert. (Deshayes' edit.) vol. ix. pp. 510, 511.

Hab. Sooloo Sea, northern extremity of Borneo; Adams.

The cancellated sculpture of this species is subject to considerable modification; after an examination of numerous specimens it is obvious that the *P. reticulata* and *ficoides*, of Lamarck, are merely different states of the same.

Species 2. (Mus. Cuming.)

FICULA DUSSUMIERI. *Fic. testâ elongato-pyriformi, gracili, spirâ subexsertâ, liris transversis plano-depressis undique cingulatâ, lirarum interstitiis striis longitudinalibus cancellatis; pallidè spadiceâ, strigis rufo-fuscescentibus undulatis longitudinaliter pictâ, aperturæ fauce spadiceo-fuscescente.*

DUSSUMIER'S FICULA. Shell elongately pyriform, slender, with the spire little exserted, encircled throughout with flatly depressed transverse ridges, the interstices between which are cancellated with longitudinal striæ; pale fawn colour, painted longitudinally with waved light rufous brown streaks, interior of the aperture fawn-brown.

VALENCIENNES, Kiener, Iconographie coq. viv. p. 25. pl. 11.

Hab. China.

Chiefly distinguished by its elongated and slender growth; its longitudinally streaked style of painting is also peculiar.

Species 3. (Mus. Cuming.)

FICULA DECUSSATA. *Fic. testâ ventricoso-pyriformi, subamplâ, conspicuè transversim costatâ; costis subdistantibus, lirâ parvâ interveniente, interstitiis striis nitidè cancellatis; luteo-spadiceâ, costis lirisque rufo-fusco subirregulariter articulatis, aperturæ fauce vividè violaceâ.*

THE DECUSSATED FICULA. Shell ventricosely pyriform, rather large, conspicuously transversely ribbed, ribs rather distant, with a fine intervening ridge, the interstices being neatly cancellated with striæ; yellowish fawn colour, ribs and ridges somewhat irregularly articulated with red-brown, interior of the aperture rich violet.

Bulla decussata, Wood, Ind. Test. Supp.

Pyrula ventricosa, Sowerby, Kiener.

Hab. ——?

Well characterized by its ventricose growth and conspicuous spotted ribs. Though unknown to Lamarck, and comparatively new to modern conchologists, this species was figured seventy years since by Martini in the 'Conchylien Cabinet' under the title *Ficus tenuis magna cancellata.*

Species 4. (Mus. Cuming.)

FICULA LÆVIGATA. *Fic. testâ abbreviato-pyriformi, ventricosâ, liris superficiariis compresso-planatis undique creberrimè cingulatâ; cærulescente-griseâ, interdum obscurè albifasciatâ, maculis punctisque violaceis rufis et albis aspersâ, aperturæ fauce vividè violaceâ.*

THE SMOOTH FICULA. Shell abbreviately pyriform, ventricose, very closely encircled throughout with compressly flattened superficial ridges, blueish-grey, sometimes obscurely white-banded, sprinkled with violet, white and red dots and blotches, interior of the aperture rich violet.

Bulla ficus, Linnæus, Syst. Nat. (12th. edit.) p. 1184.
Pyrula ficus, Lamarck.

Hab. Eastern, Seas.

This species may be recognised by its short pyriform growth and smoothness; although assigned to the *Bulla ficus* of Linnæus, it is clear that he included the *F. reticulata* also under this head. To avoid tautology I am under the necessity of introducing a new specific name.

MONOGRAPH

OF THE GENUS

PYRULA.

"O, how canst thou renounce the boundless store
Of charms which Nature to her votary yields."—*Beattie.*

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PYRULA.

PLATE I.

Genus PYRULA, *Lamarck.*

Testa subpyriformis, spirâ nunc exsertâ, nunc plano-depressâ, columellâ lævi, canali plus minusve elongatâ; labro simplici, aperturæ fauce interdum lævi, interdum radiatim liratâ aut striatâ. Operculum corneum.

Shell somewhat pyriform, spire sometimes exserted, sometimes flatly depressed; columella smooth, canal more or less elongated; lip simple, interior of the aperture sometimes smooth, sometimes rayed with ridges or striæ. Operculum horny.

The *Pyrulæ* were separated from the genus *Fusus* of Bruguière by Lamarck, with no other distinction of character than that of form, hence there are several species on the confines of the group, which may be referred to either genera with almost equal propriety. Such are the *P. pugilina* and *cochlidium*, referred one to each genus by the founder of the present, though generically the same; the typical species, such as the *P. carica*, *canaliculata* and *spirata*, are nevertheless characteristic in their peculiar pear-shaped growth.

One division of the Lamarckian *Pyrulæ* commonly known as the 'Figs', were distinguished as a genus by Swainson under the name of *Ficula*, and the animal has since been found to be distinct, allied rather to *Harpa* and *Dolium*.

The *Pyrulæ* thus restricted are somewhat limited in number; they inhabit chiefly the Eastern Seas, with one or two from Mexico, the West Indies and California.

Species 1. (Fig *a* Mus. Cuming, Fig *b* Mus. Adamson.)

PYRULA PUGILINA. *Pyr. testâ ovato-pyriformi, crassâ, tumidâ, anfractibus apicem versus spiraliter liratis, supernè concavo-angulatis, ad angulum nunc lævibus, rotundatis, nunc tuberculatis, tuberculis compressis, prominentibus, erectis; castaneo-fuscâ, aperturæ fauce aurantio-luteâ.*

THE CHAMPION PYRULA. Shell ovately pyriform, thick, swollen, whorls spirally ridged towards the apex, concavely angulated round the upper part, sometimes smooth and rounded at the angle, sometimes tubercled, the tubercles being compressed, prominent and erect; chesnut-brown, interior of the aperture orange-yellow.

Murex pugilinus, Born, Mus. p. 315.
Fusus crassus carnarius, Martini.
Murex vespertilio, Gmelin.
Pyrula vespertilio, Lamarck.
Pyrula carnaria, Enc. Méth.
Eadem var. *Pyrula fulva*, Deshayes.

Hab. Eastern Seas.

The specimens selected for the illustration of this well-known species, show that the tubercled structure of the whorls, as in the genus *Voluta*, is very inconstant.

Species 2. (Mus. Cuming.)

PYRULA COCHLIDIUM. *Pyr. testâ fusiformi-pyriformi, spirâ elevatiusculâ, suturis peculiariter excavatis, anfractibus apicem versus spiraliter tenuiliratis, conspicuè depresso-angulatis, ad angulum tuberculatis, tuberculis compressis, fortibus, subdistantibus; intensè castaneo-fuscâ, aperturæ fauce aurantio-luteâ.*

THE WINDING-STAIR PYRULA. Shell fusiformly pear-shaped, spire rather elevated, sutures peculiarly excavated, spirally finely ridged towards the apex, conspicuously depressly angulated, tubercled at the angle, tubercles compressed, strong, somewhat distant; deep chesnut-brown, interior of the aperture orange-yellow.

Pyrula cochlidium, Enc. Méth. pl. 434. f. 2.
Murex cochlidium, Linnæus.
Fusus cochlidium, Lamarck.

Hab. Raines' Island, Torres Straits (on the reefs); Capt. Ince.

This species is of a more fusiform growth than the preceding, but should certainly be referred to the same genus, as represented in the 'Encyclopédie Méthodique'; it is amply distinguished by the indented character of the sutures, and by its stronger and more widely separated tubercles.

Species 3. (Mus. Adamson.)

PYRULA MORIO. *Pyr. testâ subfusiformi, spiraliter sulcatâ et striatâ, apicem versus tenuiliratâ, anfractibus supernè concavo-depressis, nunc angulatis et conspicuè compresso-tuberculatis, nunc rotundatis, lævibus aut obsoletè nodosis; nigricante-castaneâ, fasciâ luteo-albidâ unicâ aut pluribus cingulatâ.*

THE DARK PYRULA. Shell somewhat fusiform, spirally grooved and striated, finely ridged towards the apex, whorls concavely depressed round the upper part, sometimes angulated and conspicuously compressly tubercled, sometimes rounded and smooth or obsoletely noduled; blackish-chesnut encircled with one or more yellowish-white bands.

Murex morio, Linnæus, Syst. Nat. (12th. edit.) p. 1221.
Fusi morio and *coronatus*, Lamarck.

Hab. Island of Trinidad, West Indies, (on mud banks); J. Cuming.

The generic character of this species appears to be so nearly identical with the former, that I venture to include it under the head of *Pyrula*. It is subject to the same variation of growth as illustrated in the accompanying representations of *P. pugilina*, the tubercled variety, here figured, having been erroneously distinguished by Lamarck as a new species with the name *Fusus coronatus*.

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PYRULA.

PLATE II.

Species 4. (Mus. Cuming.)

PYRULA BELCHERI. *Pyr. testâ subpyriformi, basem versus contractâ, anfractibus supernè angulato-declivibus, squamis grandibus elongatis erectis ad angulum conspicuè coronatis; columellâ subumbilicatâ; labro simplici, infernè unidentato; albidâ, carneo-fuscescente tinctâ.*

BELCHER'S PYRULA. Shell somewhat pear-shaped, contracted towards the base, whorls angularly slanting round the upper part, conspicuously coronated at the angle with large elongated erect scales; columella slightly umbilicated; lip simple, furnished with a tooth towards the lower part; whitish, stained with flesh-brown.

Murex Belcheri, Hinds, Moll. Voy. Sulphur, p. 8. pl. 2. f. 1–3.

Hab. San Diego, California (from a bank of mud near the head of the harbour); Sir Edward Belcher.

I think Mr. Hinds has erred in referring this remarkable species to the genus *Murex*; its beautiful diadem of scales cannot be technically regarded as varices.

The generic peculiarities of the shell approximate those of *P. corona* represented at Fig. 7.

Species 5. (Mus. Cuming.)

PYRULA ELONGATA. *Pyr. testâ elongato-pyriformi, angustâ, anfractibus supernè plicatis, ultimo læviusculo, plicis conspicuè nodosis, cæteris liris tenuibus cingulatis, plicis lævibus, canali spiraliter sulcato; luteo-rufescente.*

THE ELONGATED PYRULA. Shell elongately pyriform, whorls plicated round the upper part, last whorl smooth, with the plaits conspicuously noduled, the rest encircled with fine ridges, the plaits being smooth; canal spirally grooved; yellowish-red.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. ix. p. 513.

Fusus elongatus, Kiener.

Hab. Eastern Seas.

One of those species equally allied in form to the *Pyrula Ternatana* and *Fusus colosseus*, and might be referred to either genus. It is distinguished from the following species by its smooth surface and by the more rounded growth of the whorls.

Species 6. (Mus. Cuming.)

PYRULA TERNATANA. *Pyr. testâ elongato-pyriformi, anfractibus supernè angulatis, ad angulum acutè nodosis, nodis erectis prominentibus, anfractibus spiraliter liratis, liris subobtusis, irregularibus, supra angulum tenuibus, infra latiusculis; castaneo-fuscâ, aperturæ fauce, lutescente-carneâ.*

THE TERNATE PYRULA. Shell elongately pyriform, whorls angulated round the upper part, sharply noduled at the angle, nodules erect, prominent, whorls spirally ridged, ridges somewhat obtuse, irregular, fine above the angle, rather broad beneath; chesnut brown, interior yellowish-flesh colour.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. ix. p. 513.

Murex Ternatanus, Gmelin.

Hab. Island of Guimaras, Philippines (found on mud banks); Cuming.

Although there is no mention of this species in the 'Systema Naturæ', it was known to several writers on Natural History anterior to Linnæus; and appears to have been named the 'Ternate Spindle' after one of the Molucca or Spice Islands, by a Dutch missionary resident at Amboyna of the name of Valentyn, in a work published in Amsterdam about the year 1725.

Species 7. (Mus. Cuming.)

PYRULA CORONA. *Pyr. testâ ovato-pyriformi, anfractibus supernè concavo-angulatis, squamis fornicatis erectis creberrimè et irregulariter ordinatis ad angulum coronatis, squamarum serie unicâ prope ad basem; albidâ, cæruleo et rufo-fusco fasciatâ.*

THE CROWN PYRULA. Shell ovately pyriform, whorls concavely angulated round the upper part, coronated at the angle with erect vaulted scales, arranged very closely and irregularly, with also a single row of scales near the base; whitish, banded with blue and red-brown.

Corona Mexicana, Chemnitz, Conch. Cab. vol. x. p. 243. pl. 161. f. 1526, 1527.

Murex corona, Gmelin.

Fusus corona, Lamarck.

Hab. Mexico.

This well-known and characteristic species hitherto referred to *Fusus*, belongs to the present group.

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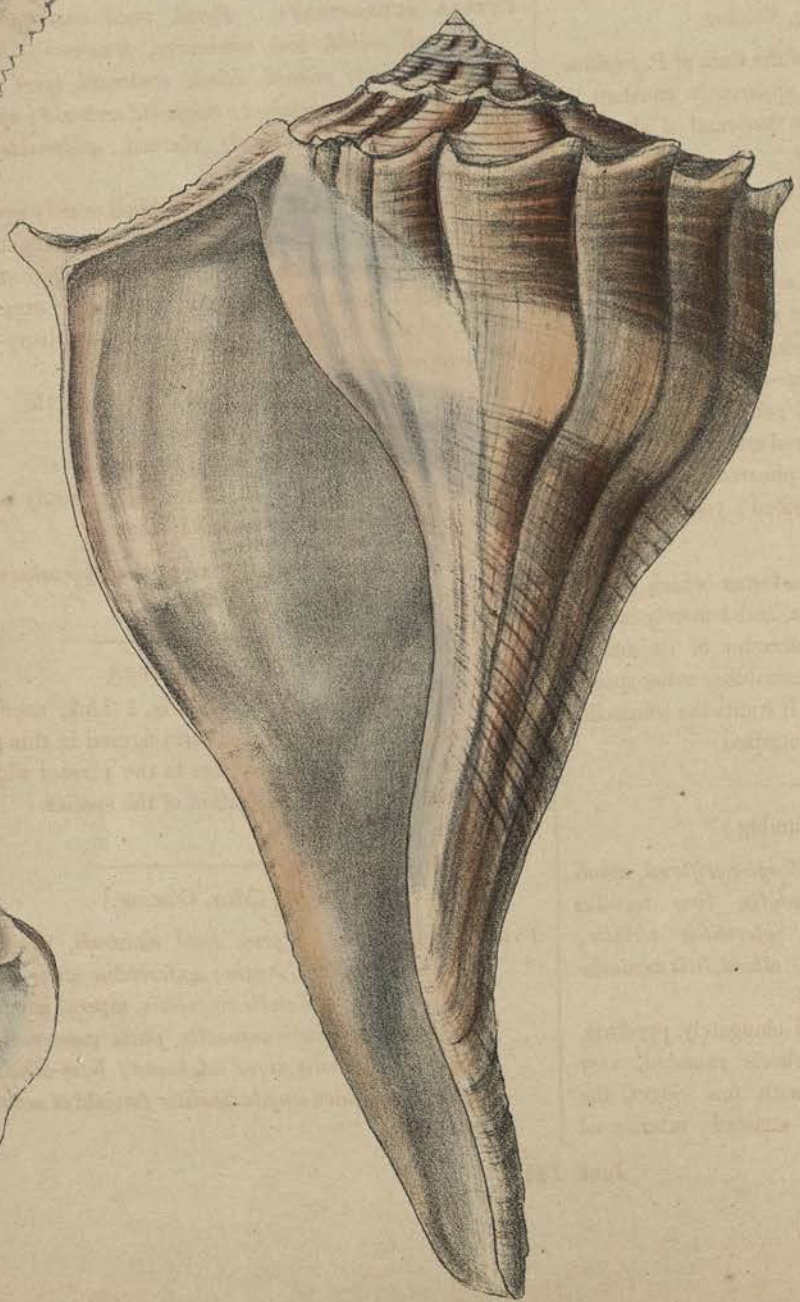


3

11

12

Sowerby del et lith.

Reeve imp.

PYRULA.

PLATE III.

Species 8. (Mus. Cuming.)

PYRULA LACTEA. *Pyrul. testâ subfusiformi, anfractibus transversim tenuiter liratis et striatis, supernè angulatis, ad angulum nodoso-tuberculatis aperturæ fauce radiatim tenuiliratis; intus extusque flavescente-lacteâ.*

THE CREAM-COLOURED PYRULA. Shell somewhat fusiform, whorls transversely finely ridged and striated, angulated round the upper part, nodosely tubercled at the angle; interior of the aperture radiately finely ridged; yellowish-cream colour within and without.

Hab. Philippine Islands; Cuming, Belcher.

Although partaking very much of the form of *P. pugilina*, it is nevertheless distinct, and apparently constant in colour; care must be taken not to confound it also with young specimens of *Fusus colosseus*.

Species 9. (Mus. Cuming.)

PYRULA ANOMALA. *Pyrul. testâ solidâ, subfusiformi, anfractibus transversim sulcatis et striatis, medio tumidis, longitudinaliter plicatis et nodosis; columellâ umbilicatâ; labro serrato; lutescente-albâ.*

THE ANOMALOUS PYRULA. Shell solid, somewhat fusiform, whorls transversely grooved and striated, swollen in the middle, longitudinally plicated and noduled; columella umbilicated; lip serrated; yellowish-white.

Hab. ——?

This is one of those anomalous forms which has no genus exactly suited for its reception, and I merely include it under the head of *Pyrula* on account of its generic affinity with the *P. subrostrata*. Resembling some species of *Turbinella* in general appearance, it wants the columellar plaits, by which that genus is characterized.

Species 10. (Mus. Cuming.)

PYRULA CLAVELLA. *Pyrul. testâ oblongo-pyriformi, canali subelongato, anfractibus rotundatis, liris tenuibus undique creberrime cingulatis, interstitiis striatis; aperturæ fauce radiatim sulcatâ; albidâ, liris aurantio-fusco multiarticulatis, intus albâ.*

THE LITTLE CLUB PYRULA. Shell elongately pyriform, canal somewhat elongated, whorls rounded, very closely encircled throughout with fine ridges, the interstices between which are striated; interior of the aperture radiately grooved; whitish, ridges profusely articulated with orange-brown, interior white.

Hab. China.

An interesting species not included in M. Kiener's monograph nor hitherto described; it is figured in Griffith's Cuvier Pl. 37. Fig. 4. under the name of *P. striata* from which, it is scarcely necessary to add, it is quite distinct.

Species 11. (Mus. Cuming.)

PYRULA SUBROSTRATA. *Pyrul. testâ ovato-pyriformi, crassâ, solidâ, basi subrecurvâ, transversim striatâ, prope basem sulcatâ, deinde contractâ, spirâ apicem versus fortiter nodulosâ; columellâ excavatâ; aperturæ fauce profundè sulcatâ; eburneâ, epidermide luteâ lævigatâ indutâ.*

THE SLIGHTLY BEAKED PYRULA. Shell ovately pyriform, thick, solid, recurved at the base, transversely striated, grooved near the base, then contracted; spire strongly noduled towards the apex; columella excavated; interior of the aperture deeply grooved; ivory-white, covered with a smooth yellow epidermis.

GRAY, Zool. Voy. Blossom, p. 115. pl. 36. f. 15.

Buccinum subrostratum, Wood.

Fusus lapillus, Broderip and Sowerby.

Hab. Bay of Montija, West Columbia (in sandy mud at the depth of twelve fathoms); Cuming.

A solid heavy shell having more the appearance of a plait-less *Turbinella* than a *Pyrula*.

Fig. 12. (Mus. Cuming.)

The shell represented at Fig. 9 is, I think, merely an elongated growth of the typical form figured in this place. The same name therefore applies to the present which is the more characteristic illustration of the species.

For Sp. 13 see Plate IX.

Species 13 (Mus. Cuming.)

PYRULA PERVERSA. *Pyrul. testâ sinistrali, pyriformi, ventricosâ, canali elongato; anfractibus striis subdistantibus leviter undulatis cingulatis, supernè angulatis, ad angulum tuberculis coronatis, plicis quasi varicibus planatis e tuberculis usque ad basem; luteo-albidâ vel cærulescente, fusco longitudinaliter fasciatâ et nebulatâ, intus albâ.*

THE REVERSED PYRULA. Shell sinistral, pyriform, ventricose, canal elongated, whorls encircled with slightly waved rather distant striæ, angulated round the upper part, coronated at the angle with tubercles, a fold like a flattened varix extending from each tubercle down to the base; yellowish-white or blueish, longitudinally banded and clouded with brown, interior white.

LAMARCK, Anim. sans vert. vol. ix. p. 506.

Murex perversus, Linnæus.

An eadem distorta? *Pyrula candelabrum*, Lamarck.

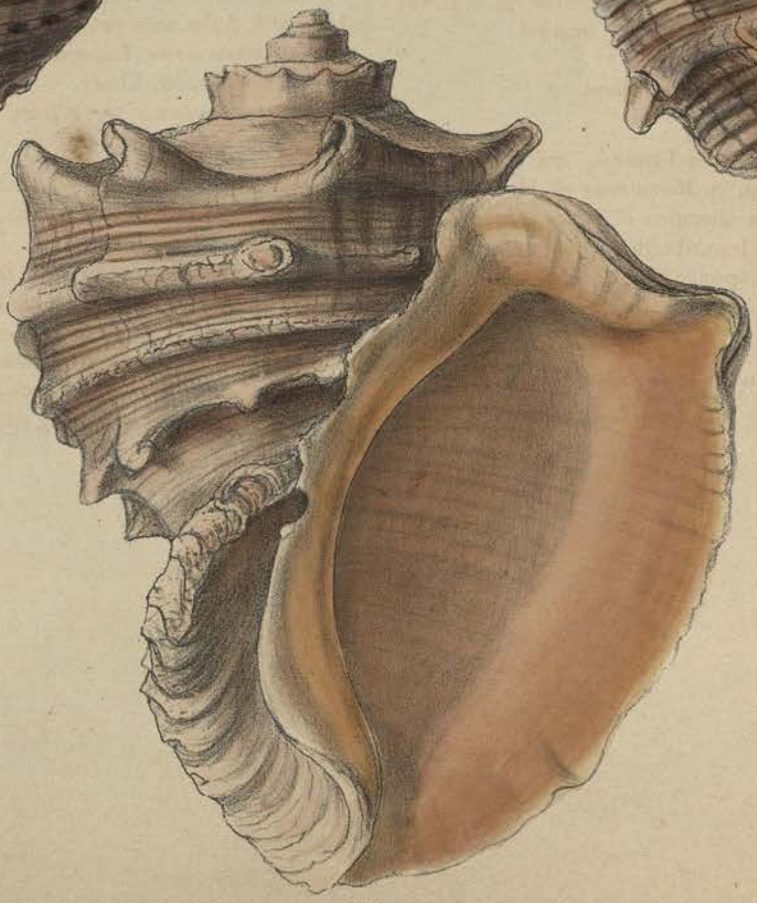
Hab. Gulf of Mexico.

I have every reason to think that the *P. candelabrum* of Lamarck, is merely a mis-shapen growth of the species under consideration, if not of the *P. arauna*.

14

15a

15b



15c

Sowerby del et lith.

Reeve imp

PYRULA.

PLATE IV.

Species 14. (Mus. Cuming.)

PYRULA BULBOSA. *Pyrul. testâ pyriformi, ventricosissimâ, spiræ suturis impressis, anfractibus transversim striatis, bifariam vel trifariam squamato-tuberculatis; columellâ ampliter umbilicatâ; canali brevissimo; aperturæ fauce radiatim sulcatâ; extus rufescente-fuscâ, intus carneâ.*

THE BULBOUS PYRULA. Shell pyriform extremely ventricose, sutures of the spire impressed, whorls transversely striated, encircled with two or three rows of squamate tubercles; columella very largely umbilicated; canal very short; interior of the aperture radiately grooved; exterior reddish-brown, interior flesh colour.

SOLANDER, MSS., Dillwyn, Cat. of Shells vol. ii. p. 631.
Murex rapa, Gmelin (not of Linnæus).
Pyrula rapa, Lamarck.
Murex rapiformis, var. *a*. Born.

Hab. Eastern Seas.

The *Pyrula papyracea* Lamarck, and not the species under consideration, is *Murex rapa* of Linnæus; hence the necessity for an alteration of names. I do not however agree with the learned editor of the 'Anim. sans vert.' in adopting Born's specific title, *rapiformis*, whilst there is already a *P. rapa*.

Species 15. (Fig *a* and *c* Mus. Belcher, Fig *b* Mus. Cuming.)

PYRULA BEZOAR. *Pyrul. testâ abbreviato-pyriformi, ventricosissimâ, crassiusculâ, transversim striatâ, trifariam vel quadrifariam squamato-tuberculatâ, anfractibus supernè angulatis, supra angulum interdum concentricè fimbriato-plicatis; columellâ subumbilicatâ; aperturæ fauce radiatim sulcatâ; albido-fuscescente, cingulis angustis nigris plus minusve articulatâ, intus rufo-aurantiâ.*

THE BEZOAR PYRULA. Shell abbreviately pyriform, very ventricose, rather thick, transversely striated, encircled with three or four rows of squamate tubercles; whorls angulated round the upper part, sometimes concentrically fimbriately plicated above the angle; columella moderately umbilicated; aperture radiately grooved; whitish brown, more or less articulated with narrow black zones, interior reddish orange.

LAMARCK, Anim. sans vert. vol. ix. p. 514.
Buccinum bezoar, Linnæus.
Purpura bezoar, Kiener.
Murex rapiformis, var. *β* Born.

Hab. Eastern Seas.

To illustrate this extremely variable species in an adequate manner, I have selected three specimens exhibiting its most distinct phases of growth. In Fig 15 *b*. which is that of most common occurrence, the upper part of the whorl is crowded with fimbriated plaits; Fig 15 *a*. is chiefly characteristic of the narrow articulated zones of dark painting, of which there are indications more or less in all specimens; and Fig 15 *c*. represents a magnificent example of finely expanded growth richly coloured in the interior.

June, 1847.

16

17 a

17 b

17 c

Sowerby del et lith.

Reeve imp.

PYRULA.

PLATE V.

Species 16. (Mus. Brit.)

PYRULA ARUANA. *Pyrul. testâ pyriformi, ventricosâ, tumidâ, crassiusculâ, transversim striatâ, anfractibus supernè depresso-angulatis, tuberculis grandibus prominentibus squamatis ad angulum armatis, aperturæ fauce striatâ; albidâ, rubido-fusco longitudinaliter strigatâ et transversim fasciatâ, columellâ aurantio-rufâ.*

THE LARGE FIG PYRULA. Shell pyriform, ventricosely swollen, rather thick, transversely striated, whorls depressly angled round the upper part, armed at the angle with large prominent squamate tubercles; interior of the aperture striated; whitish, longitudinally streaked and transversely banded with reddish brown; columella orange-red.

Murex aruanus, Linnæus, Mus. Ulric. p. 641.
Murex carica, Gmelin.
Pyrula carica, Lamarck.

Hab. ——— ?

This species may be distinguished from the *P. perversa* by its stouter and broader growth, and by the orange red colouring of the columella. It grows to a larger size and I am not aware that it is ever found reversed.

Species 17. (Fig. *a* and *b*, Mus. Cuming. Fig. *c*. Mus. Brit.)

PYRULA PARADISIACA. *Pyrul. testâ ovato-pyriformi, crassâ, solidâ, basi abbreviatâ et umbilicatâ; anfractibus supernè angulatis, nunc rotundatis lævibus, nunc concavis, conspicuè nodosis, basi et supra angulum spiraliter sulcatis; albidâ aut vividè aurantio-fulvâ, in testâ juniore fasciis numerosis angustis purpureo-fuscis undique spiraliter cingulatâ.*

THE PARADISE PYRULA. Shell ovately pyriform, thick, solid, abbreviated and umbilicated at the base; whorls angulated round the upper part, sometimes concave and conspicuously nodose, spirally grooved at the base and above the angle; whitish or bright orange-yellow, encircled in the young shell with numerous narrow purple-brown bands.

Pyrum Paradisiacum, Martini, Conch. Cab. vol. iii. p. 202. pl. 94. f. 909, 910.
Murex ficus nodosa, Chemnitz.
Buccinum pyrum, Gmelin.
Pyrulæ nodosa and *citrina*, Lamarck.

Hab. Ceylon, Mozambique, &c.

Few species exhibit a wider variation of growth than the present, some examples being rounded and smooth at the top (properly speaking, the base) whilst others are strongly noduled. The difference in the style of painting appears rather to indicate a difference in age; not that every specimen in an early stage of growth exhibits the bright purple brown bands represented at Fig. 17 *a*, but all that have this character are found of lighter growth, and traces of it may be observed in the rich orange yellow specimens of maturer age.

Lamarck notices the circumstance of this shell being vulgarly called 'The Orange-mouth Pear', *Poire à bouche orangée*; it was, however, originally called the 'Pear of Paradise', *Poire du Paradis*, *Oranjiemondige Paradyspeer*, and I think Martini's name above quoted should certainly be retained..

18

19a

19b

20

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Coverby del et lith.

Reeve imp.

PYRULA.

PLATE VI.

Species 18. (Mus. Cuming.)

PYRULA MELONGENA. *Pyrul. testâ ovatâ, ventricosâ, supernè tumidâ, spirâ parvâ, peculiariter demersâ, basi emarginatâ et recurvâ; spiræ anfractibus transversim tenuiliratis, concentricè plicatis, ultimo lævigato, nunc mutico, nunc tuberculis squamatis prominentibus bitriseriatim armato, aperturâ perampla, supernè canaliculatâ; rubido-fuscâ aut cærulescente fasciis angustis luteis irregulariter cingulatâ, intus albâ.*

THE WELL-ARMED PYRULA. Shell ovate, ventricose, swollen round the upper part, spire small, peculiarly sunk; whorls of the spire transversely finely ridged, concentrically plaited, last whorl smooth, sometimes armed with two or three rows of prominent squamate tubercles, sometimes without; aperture very large, canaliculated at the upper part; reddish brown or blueish, encircled with irregular narrow yellowish bands, interior white.

LAMARCK, Anim. s. vert. (Deshayes' edit.) vol. ix. p. 509. *Murex melongena*, Linnæus.

Hab. Eastern Seas.

This well-known species, like the *P. Paradisiaca*, is as frequently found without tubercles as with.

Species 19. (Mus. Cuming.)

PYRULA BISPINOSA. *Pyrul. testâ ovato-fusiformi, transversim undique subrugoso-liratâ, spiræ anfractibus concentricè plicato-costatis, suturis squamatis, ultimo supernè angulato, squamarum seriebus duabus ad angulum armato, squamarum serie unicâ prope basin; albâ, intus aurantio-lutescente.*

THE DOUBLE-SPINED PYRULA. Shell ovately fusiform, transversely rather roughly ridged throughout, whorls of the spire concentrically plicately ribbed, sutures squamate, last whorl angulated round the upper part, armed with two rows of scales at the angle, also with a single row of scales near the base; white, orange-yellow within.

PHILIPPI, Abb. und Besch. Conch. Pyrula, Pl. I. f. 7, 8.

Hab. ——?

The leading feature of this species appears to consist in the body-whorl being surmounted by a double row of scales; a character not observed by Lamarck in his description of *P. angulata*, which it seems most to approximate. The specimen here represented from Mr. Cuming's collection, the only one I have seen, does not exhibit the brown band represented by Philippi.

Species 20. (Mus. Cuming.)

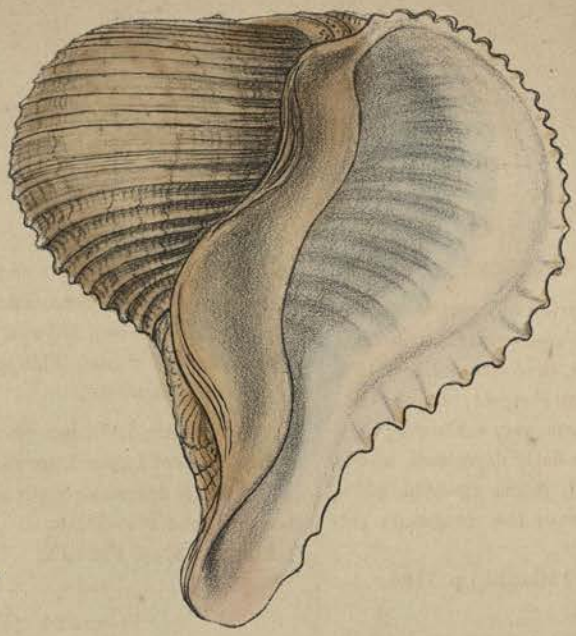
PYRULA PATULA. *Pyrul. testâ ovatâ, subpyriformi, ventricosâ, supernè tumidâ, spirâ parvâ, acutâ, peculiariter demersâ; spiræ anfractibus concentricè plicato-costatis, ultimo lævigato, basin versus sulcato, supernè concavo-depresso, plerumque rotundato, mutico, interdum tuberculorum serie unicâ coronato; aperturâ perampla, supernè canaliculatâ; castaneo-fuscâ, fasciis lineisque luteis cingulatis epidermide crassâ fibrosâ indutâ, aperturâ pallidè aurantio-carneâ.*

THE WIDE-OPEN PYRULA. Shell ovate, somewhat pyriform, ventricose, swollen round the upper part, spire small, acute, peculiarly sunk, whorls of the spire concentrically plicately ribbed, the last whorl smooth, grooved towards the base, concavely depressed round the upper part, generally rounded, and free from tubercles, sometimes coronated with a single row; aperture very large, canaliculated at the upper part; chesnut brown, encircled with yellow bands and lines, covered with a thick fibrous epidermis; aperture pale orange flesh-colour.

BRODERIP, and SOWERBY, Zool. Journ. vol. iv. p. 377.

Hab. Bay of Caraccas (on mud banks); Cuming.

So closely does this species approximate to the *P. melongena*, that it might almost be regarded as a variety of that species. It appears, however, distinct, and is from a very different locality.



21

22

23

24

Sowerby del et lith.

Reeve imp

PYRULA.

PLATE VII.

Species 21. (Mus. Cuming.)

PYRULA RAPA. *Pyrul. testâ pyriformi, ventricosissimâ, tenui, subpellucidâ, spirâ plano-depressâ, anfractibus rotundatis, transversim liratis, liris rotundatis, obsoletè squamatis; canali plus minusve elongato; luteo-albidâ.*

THE RAPE PYRULA. Shell pyriform, very ventricose, thin, somewhat transparent, spire flatly depressed, whorls rounded, transversely ridged, ridges rounded, obsoletely squamate; canal more or less elongated; yellowish white.

Bulla rapa, Linnæus, Syst. Nat. (12th edit.) p. 1184.
Pyrula papyracea, Lamarck.

Hab. Island of Ticao, Philippines (among coral sand); Cuming.

The chief variation in the growth of this species consists, in some specimens being closely spirally ridged throughout, whilst others are smooth or ridged only at the base.

Species 22. (Fig. 22 and 23, Mus. Cuming.)

PYRULA GALEODES. *Pyrul. testâ ovato-pyriformi, subventricosâ, undique spiraliter liratâ basin versus contractâ, spirâ acutâ, compresso-tuberculatâ, suturis profundis, erecto-squamatis, anfractu ultimo vel rotundato mutico, vel angulato squamarum seriebus duabus tribusve armato; fuscâ, liris saturatioribus, aperturâ lutescente.*

THE HELMET-LIKE PYRULA. Shell ovately pyriform, somewhat ventricose, spirally obtusely ridged throughout, contracted towards the base, spire sharp, compressly tuberculated, sutures deep, erectly squamate, last whorl either rounded and free from scales, or armed with two or three rows; pale brown, ridges of a darker brown, aperture yellowish.

LAMARCK, Anim. s. vert. (Deshayes' edit.) vol. ix. p. 517.

Varietates, *Pyrulæ angulata* and *squamosa*, Lamarck.
Pyrula hippocastanum, Enc. Méth.
Murex calcaratus, Dillwyn.

Hab. Island of Samar, Philippines (at roots of Mango trees); Cuming.

There is little doubt but that the *P. galeodes*, *angulata* and *squamosa* of Lamarck are varieties of the same species, illustrative of different growth as already noticed in the *P. melongena* and *Paradisiaca*.

For fig. 23, see Plate IX.

Species 24. (Mus. Brit.)

PYRULA BUCEPHALA. *Pyrul. testâ ovato-pyriformi, transversim spiraliter liratâ, liris anfractûs ultimi plus minusve obsoletis, anfractibus supernè angulatis, seriebus duabus tuberculorum fortium prominentium armatis, tuberculis seriei superioris multò majoribus; luteo-aurantiâ, epidermide fibrosâ indutâ.*

THE BUCEPHALOUS PYRULA. Shell ovately pyriform, transversely spirally ridged, ridges of the last whorl more or less obsolete; whorls angulated round the upper part, armed with two rows of prominent tubercles, of which the lower row is much the larger; yellowish orange, covered with a fibrous epidermis.

LAMARCK, Anim. s. vert. (Deshayes' edit.) vol. ix. p. 508.

Hab. Mexico.

Chemnitz figures this species in the 'Conchylien Cabinet' with the title *Murex carnarius*, apparently confounding it with the species described under that name by his predecessor Martini, which is an orange-tinted variety of the *Pyrula pugilina*; and Dillwyn followed the same mistake by calling the species under consideration *Murex pugilinus*, var.

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PYRULA.

PLATE VIII.

Species 25. (Mus. Cuming.)

PYRULA MAWÆ. *Pyrul. testâ pyriformi, ampliter umbilicatâ, plus minusve evolutâ, anfractibus spiraliter striatis, supernè latissimè plano-depressis, acutè angulatis, ad angulum compresso-squamatis, squamis inflexis, anfractibus infernè contractis, basi extremâ squamatis; albâ aut pallidè rosaceâ.*

MAWE'S PYRULA. Shell pyriform, largely umbilicated, more or less unrolled, whorls spirally striated, very broadly flatly depressed round the upper part, sharply angulated, compressely squamate at the angle, scales bent inwards, whorls contracted at the lower part, squamate at the extreme base; white or pinkish.

GRAY, in Griffith's Cuvier, An. King. pl. xxv. f. 3, 4.

Hab. China. Cagayan, Province of Misamis, Island of Mindanao, Philippines (found in sandy mud at the depth of twenty-five fathoms); Cuming.

The growth of this remarkable shell, is similar to that of the *P. bulbosa* on an exaggerated scale.

Species 26. (Mus. Brit.)

PYRULA CANALICULATA. *Pyrul. testâ pyriformi, basi elongatâ, tenui, supernè ventricosâ, anfractibus spiraliter obsoletè obtusè liratis, supernè plano-declivibus et angulatis, ad angulum margine incrassato, interdum eximiè noduloso, spiræ suturis peculiariter profundè canaliculatis; fulvo-cinereâ, epidermide setosâ indutâ.*

THE CHANNELLED PYRULA. Shell pyriform, elongated at the base, thin, ventricose at the upper part, whorls spirally obtusely ridged, flatly slanting and angulated at the upper part, edge at the angle thickened, sometimes delicately noduled, sutures of the spire peculiarly deeply channelled; fulvous ash-colour, covered with a fine bristly epidermis.

LAMARCK, Anim. s. vert. (Deshayes' edit.) vol. ix. p. 504. *Murex canaliculatus*, Linnæus.

Hab. Massachusetts, United States; Gould.

The nodules which characterize the angle of the whorls of this species, in an early stage of growth, mostly become obsolete with age. The broad excavated canal passing round the sutures of the spire is curious, and so also is the epidermis, which consists of a number of fine erect bristles, sprouting up from the spiral ridges with the utmost regularity.

M.M. Schubert and Wagner, in their Supplement to Chemnitz, confounds this and the *Pyrula spirata* together; likewise M. Kiener, with the following observations,—"the *P. spirata* and *canaliculata* of Lamarck, are so closely allied, that I cannot discover any character sufficiently constant to distinguish them; the differences which have been remarked by authors are only due to sex or locality"! Whatever doubt may exist as to which of the two is the original *Murex canaliculatus* of Linnæus, there can be none as to their being distinct from each other; the *P. spirata* is a tropical species inhabiting the coast of Mexico.

Dr. Gould observes, in reference to the locality, Canada and the Arctic Seas, usually cited for this species, that "Cape Cod is probably its northernmost limit."

Species 27. (Mus. Cuming.)

PYRULA SPIRATA. *Pyrul. testâ oblongo-pyriformi, basi elongatâ, spirâ depressâ, suturis declivi-canaliculatis, anfractibus spiraliter undique creberrimè striatis, supernè rotundatis, vix angulatis; aperturæ fauce supernè radiatim liratâ, cærulescente-albâ, fasciis rufo-fuscis longitudinalibus et transversis vividè pictâ.*

THE SPIRAL PYRULA. Shell oblong-pyriform, elongated at the base, spire much depressed, sutures channelled in a slanting manner, whorls very closely spirally striated throughout, rounded and scarcely angulated round the upper part; interior of the aperture radiately ridged at the upper part; blueish white, richly painted with transverse and longitudinal reddish brown bands.

LAMARCK, Anim. s. vert. (Deshayes' edit.) vol. ix. p. 512. *Murex pyrum*, Dillwyn.

Hab. Gulf of Mexico.

This interesting species approaches in form to the *Ficulæ*. From *P. canaliculata*, it may be discriminated by the commonest observer.

Species 28. (Mus. Cuming.)

PYRULA LINEATA. *Pyrul. testâ abbreviato-pyriformi, valdè inflatâ, spirâ parvâ, depressâ, ferè occultâ; columellâ excavatâ, basi contortâ; albidâ, strigis rufo-fuscis notatâ, prope columellam pulcherrimè violaceâ.*

THE LINEATED PYRULA. Shell abbreviately pyriform, very inflated, spire small, depressed, nearly hid; columella excavated, twisted at the base; whitish, marked longitudinally with red brown streaks, beautifully violet next the columella.

LAMARCK, Anim. s. vert. (Deshayes' edit.) vol. ix. p. 520. *Buccinum bulbus*, Wood.

Pyrula elata, Schubert and Wagner.

Hab. ——?

An extremely rare, beautiful, and very characteristic species, which cannot well be confounded with any other.

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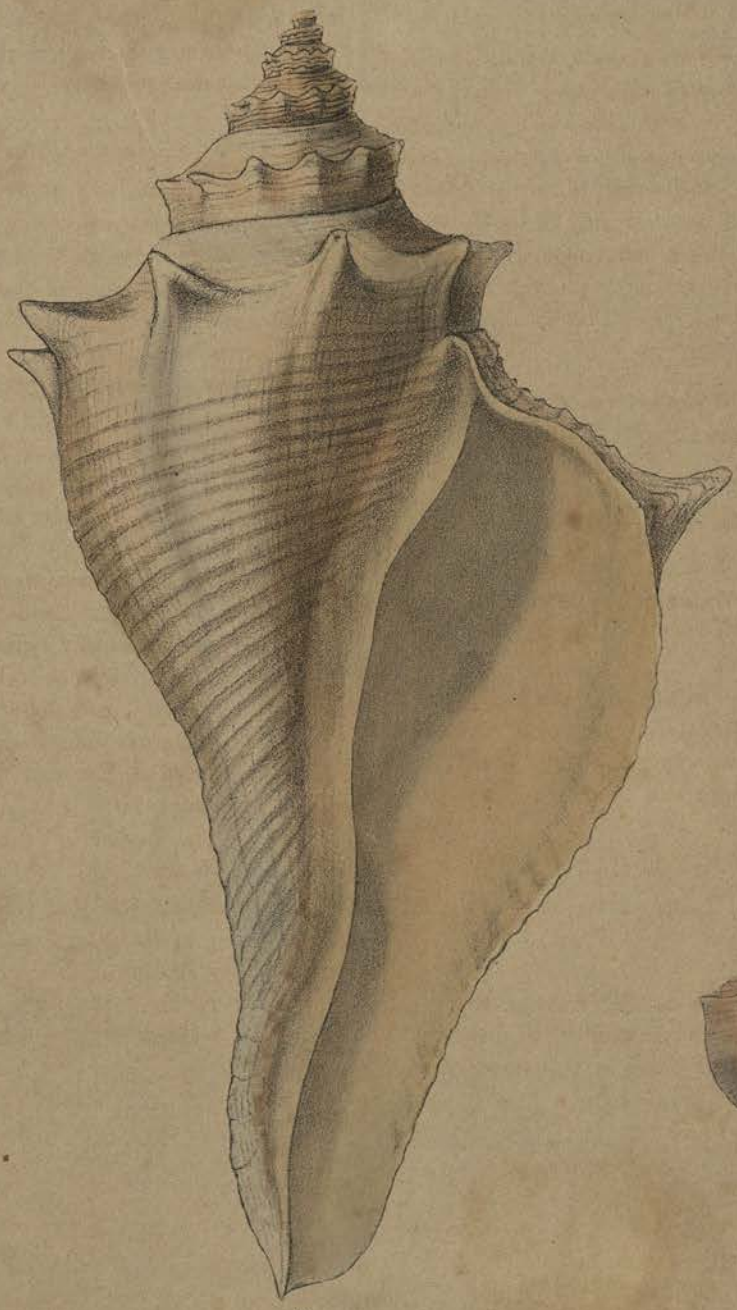
13 a.

13 b.



22.

29 a.

29 b.

Sowerby, del. et lith.

Reeve, imp.

PYRULA.

PLATE IX.

Species 12. (Mus. Cuming.)

PYRULA LIGNARIA. *Pyrul. testâ ovatâ, subfusiformi, basi recurvâ, spirâ subturritâ; anfractibus undique transversim liratis, medio angulato-ventricosis, ad angulum subindistinctè plicato-nodosis, nodis compressis; fuscâ.*

THE WOODEN PYRULA. Shell ovate, somewhat fusiform, recurved at the base, spire slightly turreted; whorls transversely ridged throughout, angularly ventricose in the middle, rather indistinctly plicately noduled at the angle, nodules compressed; brown.

Hab. —— ?

Partaking rather of the character of *Fusus*, but equally referable to the present genus.

Species 22. (Mus. Cuming.)

PYRULA TUBA. *Pyrul. testâ subfusiformi, spirâ turritâ, anfractibus undique transversim sulcatis, supernè angulatis, ad angulum tuberculatis, tuberculis prominentibus acutis; pallidè fulvâ.*

THE TRUMPET PYRULA. Shell somewhat fusiform, spire turreted, whorls transversely grooved throughout, angulated round the upper part, tuberculated at the angle, tubercles sharp and prominent; pale fulvous colour.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. ix. p. 507.
Murex tuba, Gmelin.
Fusus tuba, Enc. Méth., Kiener.

Hab. China; Lamarck.

This species ranges also on the limits of the genera *Pyrula* and *Fusus*, and is so nearly allied in form, colour, and general aspect to the *F. colosseus*, that it might easily be mistaken for that species; it is, however, distinguished by its shorter and more pyriform growth, and by its prominent diadem of tubercles.

Species 29. (Mus. Cuming.)

PYRULA SPIRILLUS. *Pyrul. testâ pyriformi, ventricosâ, spirâ plano-depressâ, apice papillosâ, erectâ, basi in canalem gracilem elongatâ; anfractibus transversim exiliter sulcatis, supernè acutè angulatis, ad angulum carinatis et compresso-nodosis, nodis solitariis infernè uniseriatim armatis, labro columellari latè expansâ, aperturæ fauce sulcatâ; fulvâ, punctis rufo-fuscis hic illic aspersâ.*

THE LITTLE SPIRE PYRULA. Shell pyriform, ventricose, spire flatly depressed, apex papillary and erect, base elongated into a slender canal; whorls transversely faintly grooved, sharply angulated round the upper part, keeled and compressly noduled at the angle, with a row of solitary nodules round the lower part; columellar lip broadly expanded, interior of the aperture grooved; fulvous colour, sprinkled here and there with red-brown dots.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. ix. p. 518.
Murex spirillus, Linnæus.
Turbinellus spirillus, Swainson.
Haustellum carinatum, Schumacher.

Hab. Eastern Seas.

The *Pyrula spirillus* is a very peculiar species, and so far removed in its general character from any other, either of this or the neighbouring genera, that some idea has been entertained of erecting it into a genus after the manner of Schumacher, who connects with it the *Murex haustellum*.

PYRULA.

	Plate.	Species.
angulata, Lamarck	VII.	22
anomala, *Reeve*	III.	9
aruana (*Murex*), Linn.	V.	16
Belcheri (*Murex*), Hinds	II.	4
bezoar (*Buccinum*), Linn.	IV.	15
bispinosa, *Philippi*	VI.	19
bucephala, *Lamarck*	VII.	24
bulbosa (*Murex*), Soland.	IV.	14
canaliculata (*Murex*), Linn.	VIII.	26
candelabrum, Lamarck	III.	13
carica, Lamarck	V.	16
carnaria, Enc. Méth.	I.	1
citrina, Lamarck	V.	17
clavella, *Reeve*	III.	10
cochlidium (*Murex*), Linn.	I.	2
corona (*Murex*), Gmelin	II.	7
elata, Schubert and Wagner	VIII.	28
elongata, *Lamarck*	II.	5
fulva, Deshayes	I.	1
galeodes, *Lamarck*	VII.	22
hippocastanum, Enc. Méth.	VII.	22
lactea, *Reeve*	III.	8
lignaria, *Reeve*	IX.	12
lineata, *Lamarck*	VIII.	28
Mawæ, *Gray*	VIII.	25
melongena (*Murex*), Linn.	VI.	18
morio (*Murex*), Linn.	I.	3
nodosa, Lamarck	V.	17
papyracea, Lamarck	VII.	21
Paradisiaca, *Reeve*	V.	17
patula, *Brod.* and *Sow.*	VI.	20
perversa, *Lamarck*	III.	13
pugilina (*Murex*), Born.	I.	1
rapa (*Bulla*), Linn.	VII.	21
rapa, Lamarck	IV.	14
spirata, *Lamarck*	VIII.	27
spirillus (*Murex*), Linn.	IX.	29
squamosa, Lamarck	VII.	22
subrostrata, *Gray*	III.	11
Ternatana (*Murex*), Gmel.	II.	6
tuba (*Murex*), Gmel.	IX.	23
vespertilio, Lamarck	I.	1

MONOGRAPH

OF THE GENUS

TURBINELLA.

"Those gay creatures of the element
That in the colours of the rainbow live."—*Shakspere.*

1a.

2.

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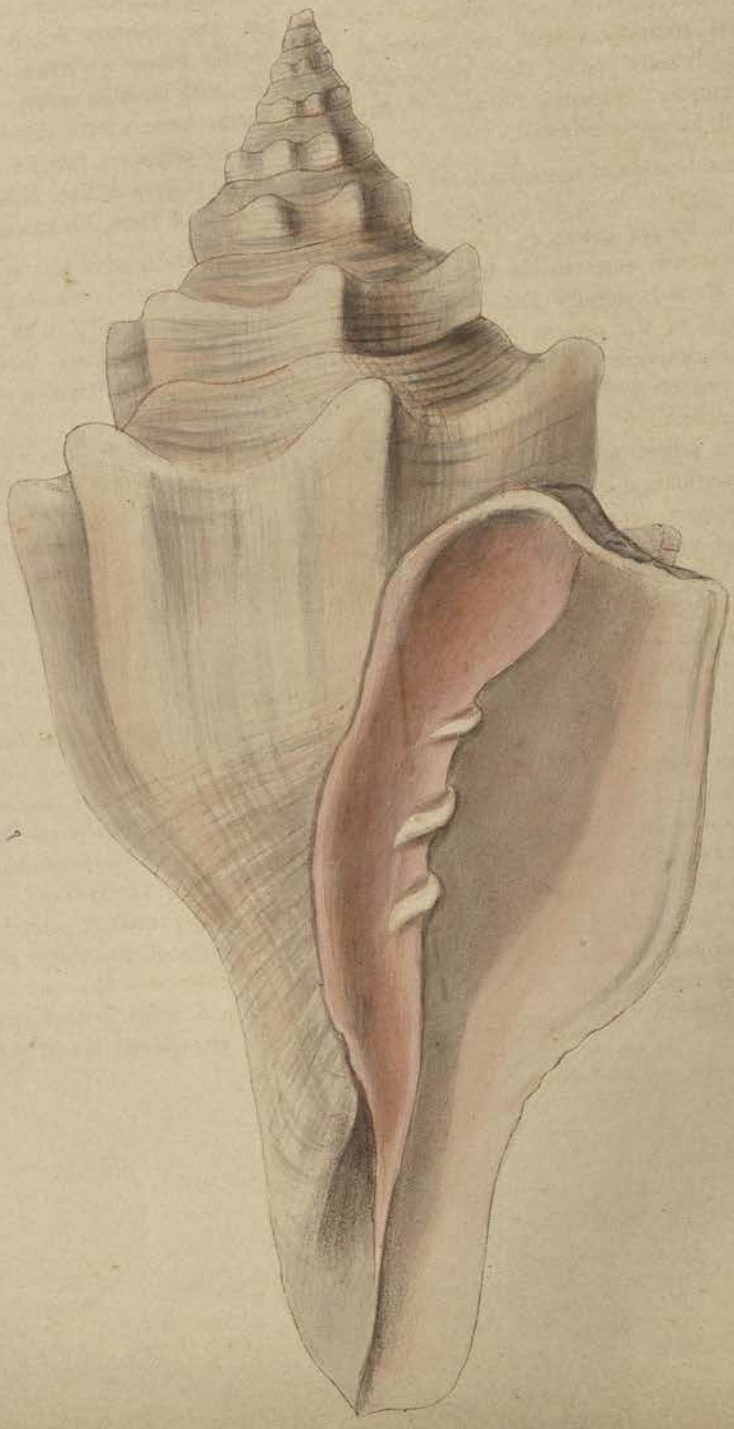

1b.

1c.

Sowerby del. et lith.

Reeve

TURBINELLA.

PLATE I.

Genus TURBINELLA, *Lamarck*.

Testa ovata vel fusiformis, solidiuscula, sæpè ponderosa, spirâ nunc brevi nunc elongatâ, canali interdum brevissimo recurvo, interdum elongato erecto, anfractibus plerumque liratis et tuberculatis, raro lævigatis; columellâ plicatâ, plicis unicâ ad quinque compressis; epidermide corneâ aut fibrosâ. Operculum parvum, corneum, acuminatum.

Shell ovate or fusiform, rather solid, often ponderous, spire sometimes short, sometimes elongated, canal now very short and recurved, now elongated and straight; whorls generally ridged and tubercled, rarely smooth; columella plaited, plaits compressed, one to five in number; epidermis horny or fibrous. Operculum small, horny, acuminated.

Apart from any consideration of the animal, the *Turbinellæ* appear at first sight to be a compound of *Voluta* and *Murex*, hence the species known to Linnæus were referred, some to the former, some to the latter genus; it is, however, to the *Murices*, through *Fusus* and *Fasciolaria*, that the subjects of the present monograph are strictly allied, and, though verging into these genera, constitute a very natural and interesting group.

The *Turbinellæ*, comparatively limited in species, are yet widely dissimilar in aspect, and may be distributed into four, if not five, sections, of which the several types are the *T. pyrum*, *cornigera*, *infundibulum*, *polygona* and *nassatula*. The species are characterized by considerable variety and force of sculpture, and great brilliancy of colour; the plaits are very irregular both in number and developement, and are particularly transverse and compressed, ranging into the oblique growth which may be observed in *Fasciolaria*, the more elongated the shell, the more oblique the plaits.

There are few species to add to this genus that have not been already described, but they are well-defined, and of interest. The *Turbinellæ* are tolerably widely distributed, though I am not aware of any being found in New Holland; the principal localities, so far as they can be obtained, are the Philippine Islands, Gallapagos and other islands of the Pacific, Mauritius, Zanzibar, Gambia, Panama, Ceylon, Acapulco, Rio Janeiro, and the West Indies; I have also two species from the Marquesas and Feejee Islands.

Species 1. (Fig. *a*, *b*, *c*, Mus. Cuming.)

TURBINELLA POLYGONA. *Turb. testâ fusiformi, liris angustis obtusis undique cingulatâ; anfractibus supernè concavo-depressis, infra biseriatim tuberculatis; aperturæ fauce exiliter liratâ; aurantio-fulvâ, tuberculis albidis, nigricante-fuscâ, undique peculiariter maculatâ.*

THE MANY-ANGLED TURBINELLA. Shell fusiform, encircled with somewhat obtuse narrow ridges, whorls concavely depressed round the upper part, encircled beneath with two rows of blunt tubercles; interior of the aperture faintly ridged; orange fulvous colour, tubercles whitish, peculiarly blotched throughout with blackish brown.

LAMARCK, Anim. s. vert. (Deshayes' edit.) vol. ix. p. 385.
Murex polygonus, Gmelin.
Fusus polygonus, Enc. Méth.

Hab. Island of Ticao, Philippines (on the reefs); Cuming.

The ground colour of this species, orange-fulvous with the tubercles white, is seemingly constant, but the dark blackish brown painting, with which it is more or less embellished, is sometimes disposed merely in dots, most frequently in irregular transverse blotches, and sometimes altogether absent.

Another species, of which a very excellent representation may be found in 'Les Delices des Yeux' of Knorr, Pt. vi. pl. 15. f. 5, and which has been confounded with this, I propose to distinguish in the following plate, Sp. 9, by the name of *T. candelabrum*.

Species 2. (Mus. Cuming.)

TURBINELLA CONCENTRICA. *Turb. testâ angusto-fusiformi, spirâ acutè turritâ, liris elevatis, subdistantibus undique funiculatâ, costis concentricis solidis latiusculis confertis, canali subelongato; aperturæ fauce liratâ, liris interruptis subdistantibus; rufo-aurantiâ, epidermide pellucido-fuscâ indutâ, aperturâ lutescente.*

THE CONCENTRIC TURBINELLA. Shell narrow-fusiform, spire sharply turreted, corded throughout with rather broad close-set concentric ribs, canal a little elongated; interior of the aperture ridged, ridges interrupted and rather distant; reddish orange, covered with a transparent brown epidermis, aperture yellowish.

Hab. St. Elena, West Columbia (in sandy mud at the depth of seven fathoms); Cuming.

Perfectly distinct from the preceding species, though similar in general aspect; the canal is shorter, the ridges, with which it is forcibly corded throughout, are equal, more distant from each other, and more elevated in the interstices between the ribs, which are closer. The shell has, moreover, a transparent orange-red hue, which is somewhat characteristic.

Species 3. (Mus. Cuming.)

TURBINELLA INFUNDIBULUM. *Turb. testâ elongato-turritâ, liris angustis conspicuè elevatis, alternatim majoribus, undique funiculatâ; costis fortibus latiusculis longitudinalibus; aperturæ fauce liratâ, liris subremotis; aurantio-fuscâ epidermide castaneâ indutâ, aperturâ lutescente.*

THE FUNNEL TURBINELLA. Shell elongately turreted, corded throughout with conspicuously raised narrow ridges, alternately larger, with rather broad strong longitudinal ribs; interior of the aperture ridged, ridges rather distant; orange brown, covered with a chesnut epidermis, aperture yellowish.

LAMARCK, Anim. s. vert. (Deshayes' edit.) vol. ix. p. 386.
Murex infundibulum, Gmelin.
Fusus infundibulum, Enc. Méth.
Polygona fusiformis, Schumacher.

Hab. West Indies (in deep water); Goss.

Distinguished by its straight elongated spindle-like form and solid structure, closely corded throughout with fine ridges, which are alternately larger.

Species 4. (Mus. Brit.)

TURBINELLA SCOLYMOS. *Turb. testâ solidâ, fusiformi, medio ventricosâ, hexagonali, spirâ pyramidali-turritâ; anfractibus spiraliter sulcatis, medio lævibus, supernè angulatis, ad angulum usque ad apicem fortiter tuberculatis, utroque tuberculo in costam latam solidam descendente; luteo-albidâ, columellâ carneo-rosaceâ.*

THE ARTICHOKE TURBINELLA. Shell solid, fusiform, ventricose in the middle, six-sided, spire pyramidally turreted; whorls spirally grooved, smooth in the middle, angulated round the upper part, strongly tubercled at the angle to the apex, each tubercle descending in a broad solid rib; yellowish-white, columella flesh-pink.

LAMARCK, Anim. s. vert. (Deshayes' edit.) vol. ix. p. 376.
Murex scolymos, Gmelin.

Hab. —— ?

This is the only species which assumes such a distinct hexagonal form; it is found of much larger size than represented in the accompanying plate.

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LIBRARY OF THE BOMBAY BRANCH OF THE ROYAL ASIATIC SOCIETY

Sowerby, del. et lith.

Reeve imp.

TURBINELLA.

PLATE II.

Species 5. (Mus. Cuming.)

TURBINELLA GEMMATA. *Turb. testâ ovatâ, crassâ, obesâ, spirâ subacuminatâ; anfractibus lævigatis aut subtiliter striatis, nodulis elevatis irregularibus undique seriatim cinctis; lutescente, nodulis partim eburneis partim purpureo-atris, intus vividè croceâ.*

THE JEWELLED TURBINELLA. Shell ovate, thick, stout, spire somewhat acuminated; whorls smooth or very finely striated, encircled throughout with rows of elevated irregular nodules; yellowish, nodules partly black, and in part opal white, interior bright saffron yellow.

Hab. —— ?

Entirely beset with conspicuously coloured nodules.

Species 6. (Mus. Cuming.)

TURBINELLA VARICOSA. *Turb. testâ elongato-fusiformi, canali breviusculo, anfractibus spiraliter tenuiliratis, costis longitudinalibus confertis concentricè decussatis; aurantio-albidâ, costis conspicuè castaneo-fuscis.*

THE VARICOSE TURBINELLA. Shell elongately fusiform, canal rather short, whorls spirally finely ridged, concentrically crossed with close-set longitudinal ribs; orange-white, ribs conspicuously chesnut-brown.

Hab. Gallapagos Islands (in crevices of rocks); Cuming.

A well-defined and very characteristic species, the chief peculiarity of which is exhibited in the unusually close-set concentric ribs and their dark contrast of colour.

Species 7. (Mus. Cuming.)

TURBINELLA CRATICULATA. *Turb. testâ cylindraceo-elongatâ, crassâ, canali breviusculo, spiræ suturis subtilissimè squamosis, anfractibus longitudinaliter obscurè plicato-costatis, liris subdistantibus acutis spiraliter cingulatis; luteo-albidâ, costis vividè ustulato-rubris.*

THE BARRED TURBINELLA. Shell cylindrically elongated, thick, canal rather short, sutures of the spire very finely scaled, whorls longitudinally obscurely plicately ribbed, spirally encircled with rather distant sharp ridges; yellowish-white, ribs of a deep burnt red colour.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. ix. p. 386. *Murex craticulatus*, Linnæus.

Hab. Island of Masbate (on the reefs); Cuming.

Easily distinguished by the peculiar blood-stained colouring of the ribs, which in sculpture are of very superficial character.

Species 8. (Mus. Cuming.)

TURBINELLA RAPA. *Turb. testâ pyriformi, crassâ, ponderosâ, rotundatâ; inflatâ, spiræ suturis impressis; anfractibus medio lævibus supra et infra spiraliter striatis, supernè obsoletè uni- vel pluriseriatim nodulosis; albâ, immaculatâ, epidermide peculiariter rugosâ indutâ; aperturâ aurantio-rufescente.*

THE RAPE TURBINELLA. Shell pyriform, thick, ponderous, rounded and inflated, sutures of the spire impressed; whorls smooth in the middle, spirally striated above and below, encircled round the upper part with one or two rows of obsolete nodules; white, unspotted, covered with a peculiarly rough epidermis; aperture orange-red.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. ix. p. 377.

Hab. —— ?

Lamarck appears to have been the first to distinguish this shell from the *T. pyrum*, with which it had been previously confounded; it may be easily distinguished from that species by its rounded and more inflated growth and white unspotted aspect.

Species 9. (Mus. Cuming.)

TURBINELLA CANDELABRUM. *Turb. testâ fusiformi-ovatâ, spirâ subturritâ; anfractibus liris angustis subacutis cingulatis, longitudinaliter plicato-costatis, supernè concavis, medio tuberculis compressis prominentibus biseriatim armatis; fusco strigatâ, liris albidis.*

THE CHANDELIER TURBINELLA. Shell fusiformly ovate, spire somewhat turreted; whorls encircled throughout with rather sharp narrow ridges, longitudinally plicately ribbed, concave round the upper part, armed with two rows of compressed tubercles round the middle; brown-streaked, ridges whitish.

Hab. St. Elena, West Columbia (in sandy mud at the depth of seven fathoms); Cuming.

The *T. candelabrum* has been confounded hitherto with the *T. polygona*, a most characteristic figure of it in Knorr

Vergn. Part VI. pl. 15. f. 5, being included in Lamarck's synonymy of that species. Though next allied to the *T. polygona* in form, it is uniformly distinct from it, and does not approximate to its varieties, three of which are represented in the preceding plate.

Species 10. (Mus. Cuming.)

TURBINELLA RECURVIROSTRA. *Turb. testâ fusiformi, spirâ turritâ, basi profundè umbilicatâ et leviter recurvâ, anfractibus transversim rudè costatis, medio fortiter plicato-tuberculatis, supra declivibus, lævigatis; pallidè aurantio-spadiceâ, costarum interstitiis castaneo tinctis et maculatis, aperturâ luteo-aurantiâ.*

THE RECURVED BEAK TURBINELLA. Shell fusiform, spire turreted, deeply umbilicated and slightly recurved at the base; whorls transversely rudely ribbed, strongly plicately tubercled in the middle, slanting and smooth above; pale orange-bay, interstices between the ribs stained and spotted with chesnut-brown, aperture orange-yellow.

SCHUBERT and WAGNER, Conchylien. Cab. Supp. p. 100. pl. 227. f. 4021. *a*, *b*.

Hab. Matnog, Island of Luzon, Philippines (in deep water); Cuming.

M. Deshayes quotes this species amongst the synomymes of *T. carinifera* but it is quite distinct; I have seen several specimens all equally characteristic.

Species 11. (Mus. Cuming.)

TURBINELLA GLOBULUS. *Turb. testâ globosâ, ventricosâ, spirâ brevi, suturis subimpressis; anfractibus obliquè concentricè plicato-costatis, supernè concavis, deinde costis squamatis cingulatis, costarum interstitiis liris subtilibus minutè squamatis exsculptis; ferrugineo-fuscâ, costis transversis albidis, aperturâ carneo-roseâ.*

THE GLOBULAR TURBINELLA. Shell globose, ventricose; spire short, sutures somewhat impressed; whorls obliquely concentrically plicately ribbed, concave round the upper part, then encircled with squamate ribs, the interstices being sculptured with fine minutely squamate ridges; rusty-brown, transverse ribs whitish, aperture flesh-pink.

Hab. Africa.

A peculiar and well known species, though not one of very common occurrence.

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Sowerby, del. et lith.

Reeve, imp.

TURBINELLA.

PLATE III.

Species 12. (Mus. Belcher.)

TURBINELLA LANCEOLATA. *Turb. testâ lanceolato-fusiformi, hexagonali, lævigatâ, basem versus rudè liratâ; anfractibus tuberculis grandibus costæformibus continuis undique longitudinaliter decussatis; aperturæ fauce tenuistriatâ; luteo-fuscescente, aperturâ vividè violaceâ.*

THE LANCEOLATE TURBINELLA. Shell lanceolately fusiform, hexagonal, smooth, rudely ridged towards the base; whorls longitudinally crossed with large continuous rib-like tubercles; interior of the aperture finely striated; yellowish brown, aperture deep violet.

Hab. Philippine Islands (on the sands); Cuming, Belcher.

This interesting species is allied to the *T. nodata*, but quite distinct; it is of a more sharply lanceolate growth, and the rib-like tubercles follow continuously one under the other, imparting an hexagonal form to the shell, whilst the whorls are less rounded. The deep violet colouring of the aperture is also characteristic; in the *T. nodata* it is constantly of a pinker hue.

Species 13. (Mus. Cuming.)

TURBINELLA LYRATA. *Turb. testâ subelongato-fusiformi, liris subtilibus elevatis nitidè cingulatâ, anfractibus supernè concavis, infra concentricè tuberculato-costatis; rufo-fuscâ.*

THE HARP-STRUNG TURBINELLA. Shell somewhat elongately fusiform, neatly encircled with fine elevated ridges, whorls concave round the upper part, concentrically tubercularly ribbed beneath; rufous brown.

Hab. Philippine Islands (on the sands); Cuming, Belcher.

A well-defined species, of a characteristic rufous-brown colour, encircled throughout with fine cords.

Species 14. (Mus. Cuming.)

TURBINELLA CARINIFERA. *Turb. testâ fusiformi, anfractibus longitudinaliter laticostatis, supernè angulato-declivibus, medio tuberculis carinatis compressis biseriatim cingulatis; infra contractis et spiraliter liratis; aurantio-fuscâ.*

THE KEELED TURBINELLA. Shell fusiform, whorls longitudinally broadly ribbed, angularly slanting round the upper part, encircled in the middle with two rows of compressed keeled tubercles, contracted and spirally ridged beneath; orange-brown.

LAMARCK, Anim. s. vert. (Deshayes' edit.) vol. ix. p. 385.

Hab. ——?

Easily recognised by its two rows of prominent compressly keeled tubercles.

The shell which M. Deshayes quotes as a synonyme of, of this, under the name *T. recurvirostra*, Schubert and Wagner, is a distinct species, for which see the preceding plate, Fig. 10.

Species 15. (Mus. Cuming.)

TURBINELLA PYRUM. *Turb. testâ supernè ventricoso-clavatâ, pyriformi, spirâ depresso-convexâ, apice papillari, elevato, anfractibus supernè rotundatis, lævibus, interdum nodis parvis uniseriatim cingulatis; columellæ plicis fortibus; albido-fulvâ, maculis spadiceis rotundis aspersâ, epidermide crassâ fibrosâ indutâ; aperturâ interdum aurantio-rufescente.*

THE PEAR TURBINELLA. Shell ventricosely club-shaped, pyriform, spire depressly convex, apex papillary, elevated; whorls rounded at the upper part, smooth, sometimes encircled with a row of small nodules; plaits of the columella strong; whitish or fulvous, sprinkled with round brown-bay spots, and covered by a thick fibrous epidermis; aperture sometimes orange-red.

LAMARCK, Anim. s. vert. (Deshayes' edit.) vol. ix. p. 378.
Voluta pyrum, Linnæus.

Hab. Ceylon.

This well-known species, the next allied in character to *T. rapa*, may be readily distinguished from it by its less swolled growth, and by the brown-spotted style of colouring, which is most conspicuous in young specimens.

Species 16. (Mus. Cuming.)

TURBINELLA APLUSTRE. *Turb. testâ ovato-fusiformi, crassâ, solidâ; anfractibus supernè concavo-angulatis ad angulum subcarinatis et compresso-tuberculatis, columellæ plicis duabus, raro pluribus, tenuibus subobsoletis; aperturâ liris verrucisque exsculptâ; albâ, fusco*

concinnè angustè et creberrimè vittatâ, epidermide tenui luteâ indutâ, intus eburneâ.

The flag Turbinella. Shell ovately fusiform, thick, solid: whorls concavely angulated round the upper part, slightly keeled and compressly tubercled at the angle, plaits of the columella two, rarely more, thin, rather obsolete; aperture sculptured with ridges and warts; white, narrowly and very closely filleted with brown, covered by a yellowish epidermis, interior ivory white.

Kiener, Icon. coq. viv. p. 37. pl. 20. f. 2.
Buccinum aplustre, Martyn.
Murex aplustre, Chemnitz.

Hab. Isle of Annaa (on the reefs); Cuming.

It is to this species that the *Monoceros cingulatum* is so nearly allied in every character save the tooth, that M. Kiener was induced to place it here.

Species 17. (Mus. Cuming.)

Turbinella cingulifera. *Turb. testâ ovato-fusiformi, transversim striatâ, spirâ turritâ; anfractibus supernè declivibus, medio ventricosis, subcarinatis et fortiter tuberculatis, deinde cingulo calloso notabili ad limbum in dente erecto desinente; aperturæ fauce striatâ; castaneo-fuscâ, cingulo albo, intus albâ.*

The girdled Turbinella. Shell ovately fusiform, transversely striated, spire turreted; whorls slanting round the upper part, ventricose in the middle, slightly keeled and strongly tubercled, then encircled with a remarkable callous girdle ending at the lip in an erect tooth; interior of the aperture striated; chesnut-brown, girdle white, interior white.

Lamarck, Anim. sans vert. (Deshayes' edit.) vol. ix. p. 384.
Murex nassa (pars), Gmelin.
Fasciolaria cingulifera, Enc. Méth.

Hab. Mouth of the Gambia, Africa.

I think there are several reasons for retaining the name given to this species by Lamarck, in preference to that originally used by Gmelin;—it is by far the more appropriate title, there is another species with a name very similar, *T. nassatula*, and under the head of *Murex nassa*, Gmelin included with it the *T. leucozonalis*.

Species 18. (Mus. Cuming.)

Turbinella smaragdulus. *Turb. testâ globoso-ovatâ, crassâ, solidâ, basi leviter recurvâ, spirâ brevi; anfractibus convexis lævibus aut obsoletè creberrimè planiliratis, liris angustis interstitiis longitudinaliter striatis; castaneo-fuscâ, lineis albis undique cingulatâ, intus eburneâ.*

The precious stone Turbinella. Shell globosely ovate, thick, solid, slightly recurved at the base, spire short; whorls convex, smooth or obsoletely very closely flatly ridged, ridges narrow, interstices longitudinally striated; chesnut brown, encircled throughout with white lines, interior ivory white.

Deshayes, Anim. sans vert. p. 383 *note*.
Buccinum smaragdulus, Linnæus.
Turbinella rustica, Lamarck.
Lagena crassa, Schumacher.

Hab. Island of Mindanao, Philippines (under stones at low water); Cuming.

To Mr. Dillwyn and M. Deshayes are we alike indebted for the restoration of the Linnæan name to this well-known species; an almost solitary instance of a *Turbinella* without any indication of nodules or tubercles.

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22 a.

22 b.

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Sowerby, del et lith.

Reeve, imp.

TURBINELLA.

PLATE IV.

Species 19. (Mus. Belcher.)

TURBINELLA PICTA. *Turb. testâ ovato-fusiformi, medio ventricosâ, anfractibus transversim sulcatis, longitudinaliter obtusè plicato-costatis, supernè concavis, deinde tuberculis compressis, quorum supremis majoribus cingulatis; aperturæ fauce striatâ; albâ, maculis numerosis nigricante-fuscis, lineisque transversis coccineis et luteis pulcherrimè pictâ, columellâ fusco-rosaceâ.*

THE PAINTED TURBINELLA. Shell ovately fusiform, ventricose in the middle, whorls transversely grooved, longitudinally obtusely plicately ribbed, concave round the upper part, then encircled with rows of compressed tubercles of which the uppermost are the largest; interior of the aperture striated; white, very beautifully painted with scarlet tinged and yellow lines, columella brownish-pink.

Hab. Feejee Islands; Belcher.

An extremely prettily painted species collected by Sir Edward Belcher, at the above-named group of Islands. Mr. Cuming possesses equally characteristic specimens from other sources.

Species 20. (Mus. Cuming.)

TURBINELLA BARCLAYI. *Turb. testâ fusiformi, anfractibus liris acutis subdistantibus spiraliter cingulatis, supernè concavis, deinde ventricosis et longitudinaliter plicato-costatis, costis latissimis, ad angulum compresso-tuberculatis; aperturæ fauce striatâ; albâ, aurantio-rufo fasciatâ et saturatiorè lineatâ.*

BARCLAY'S TURBINELLA. Shell fusiform, whorls spirally encircled with sharp rather distant ridges, concave round the upper part, then ventricose and longitudinally plicately ribbed, ribs very broad, compressly tubercled at the angle; interior of the aperture striated; white, banded with pale orange-red and lineated here and there with the same colour of a darker tint.

Hab. Island of Mauritius; Barclay.

A very distinct and interesting new species of *Turbinella*, received by Mr. Cuming from Sir David Barclay, a gentleman much attached to Natural History, and zealous collector of shells, resident at the Island of Mauritius, in honour of whom I have the pleasure of naming it.

It is a white shell, encircled with broad pale rufous-orange bands and interrupted reddish lines, ventricose in the middle, broadly tubercularly ribbed and sharply spirally ridged throughout.

Species 21. (Mus. Belcher.)

TURBINELLA THERSITES. *Turb. testâ fusiformi, basi gracili, elongatâ, anfractibus transversim subtilissimè et creberrimè corrugato-striatis, turberculis prominentibus peculiariter elongatis concentricè armatis; eburneâ, epidermide tenui flavicante indutâ.*

THE HUMPED TURBINELLA. Shell fusiform, slender and elongated at the base, whorls transversely very finely and closely striated in a wrinkled manner, concentrically armed with prominent peculiarly elongated tubercles; ivory-white, covered with a thin yellowish epidermis.

Hab. China; Belcher.

This remarkable shell collected by Captain Sir Edward Belcher at the above-named locality, is in an immature state of growth and belongs probably to a species of larger size. In its present elongated form it partakes rather of the character of *Fasciolaria*. The most striking feature of the species consists in the whorls being furnished at intervals by very peculiarly elongated bean-shaped tubercles, arranged concentrically and extremely prominent throughout.

Species 22. (Mus. Cuming.)

TURBINELLA BELCHERI. *Turb. testâ fusiformi, spirâ subturritâ, anfractibus transversim subtiliter striatis, supernè concavis, medio ventricosis, serie duplici tuberculorum, deinde serie unicâ nodulorum cinctis; aperturæ fauce striatâ; albâ, maculis flammisque nigris conspicuè pictâ, epidermide luteâ indutâ.*

BELCHER'S TURBINELLA. Shell fusiform, spire somewhat turreted, whorls transversely finely striated, concave round the upper part, ventricose in the middle, encircled with a duplicate series of tubercles, then with a row of nodules; interior of the aperture striated; white, conspicuously painted with black flames and blotches, covered with a yellow epidermis.

Hab. Cargados Garajos (coral bottom), Indian Ocean; Belcher.

July, 1847.

I have much pleasure in dedicating this richly painted species to Capt. Sir Edward Belcher, C.B., Commander of the Expedition of H.M.S. Samarang, to whom I am indebted for many valuable and interesting new species of shells collected during the voyage.

Species 23. (Mus. Belcher.)

Turbinella ovoidea. *Turb. testâ oblongo-ovatâ, crassâ, solidâ, spirâ subacuminatâ; anfractibus lævibus aut obsoletè sulcatis et striatis, columellâ fortiter triplicatâ; rosaceo-albâ, epidermide tenui corneâ lævigatâ indutâ.*

The oval Turbinella. Shell oblong-ovate, thick, solid, spire somewhat acuminated; whorls smooth or obsoletely grooved and striated, columella strongly three-plaited; pinkish-white, covered with a thin smooth horny epidermis.

Kiener, Icon. coq. viv. p. 7. pl. 17. f. 1.

Hab. Coast of Bahia; Kiener.

This is beyond doubt a very characteristic species, easily distinguished from the *T. pyrum* or *rapa*, by its oblong form, shorter canal, acuminately conical spire and thin horny epidermis.

Species 24. (Mus. Cuming.)

Turbinella crenulata. *Turb. testâ ovatâ, basi contractâ, et leviter recurvâ, spiræ suturis impressis; anfractibus rotundatis, longitudinaliter subobsoletè plicato-costatis, medio carinatis, liris acutis undique cingulatis; aperturæ fauce liratâ; ferrugineo-fulvâ, maculis ferrugineo-fuscis conspicuis medio intra costas cingulatâ.*

The crenulated Turbinella. Shell ovate, contracted and slightly recurved at the base, sutures of the spire impressed; whorls rounded, longitudinally somewhat obsoletely plicately ribbed, keeled in the middle and encircled throughout with sharp ridges, interior of the aperture ridged; rusty fulvous colour, encircled round the middle with a row of rusty brown blotches between the ribs.

Kiener, Icon. coq. viv. p. 43. pl. 9. f. 2.

Hab. Isle of Capul, Philippines (on the reefs at low water); Cuming.

A very characteristic example of this species is figured erroneously by Schubert and Wagner, in their supplement to the 'Conchylien Cabinet' for the *T. craticulata*.

M. Kiener's figure is not a very intelligible one.

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TURBINELLA.

PLATE V.

Species 25. (Mus. Taylor.)

TURBINELLA PRISMATICA. *Turb. testâ ovato-turritâ, crassâ, basi in canalem brevem subrecurvum terminatâ; anfractibus longitudinaliter plicato-costatis, transversim subtilissimè striatis, liris brevibus elevatis conspicuis super costas; albidâ, liris interruptis nigricantibus, plus minusve irridescentibus; intus crocatâ.*

THE PRISMATIC TURBINELLA. Shell ovately turreted, thick, terminating at the base in a short slightly recurved canal; whorls longitudinally plicately ribbed, transversely very finely striated, with short conspicuous elevated ridges upon the ribs; whitish, interrupted ridges blackish, more or less irridescent, interior saffron yellow.

Buccinum prismaticum, Martyn, Univ. Conch. vol. ii. pl. 2.

Hab. Friendly Islands; Martyn.

The *Turbinella prismatica* has been singularly overlooked by modern authors, I find no mention of it by Lamarck, Deshayes, or Kiener, nor is there any representation of it in the 'Conchylien Cabinet' or 'Encyclopédie Méthodique'; it is, however, a shell of great rarity, and the species may possibly now have become altogether extinct.

The exquisite drawing published by our countryman, Martyn, in 1784, is taken from a much finer example of the species than I have had the pleasure of seeing, and it is not improbable but that the irridescent hue is somewhat exaggerated for the sake of making this peculiarity manifest; still, in the specimens before me from Mr. Taylor's and Mr. Cuming's collections, particularly in one from the former, a beautiful prismatic display of colours appears both on the transverse ridges and in the interstices next the sutures. Without reference to this peculiarity, the *T. prismatica* is amply distinguished from any other species by its black interrupted transverse ridges.

Species 26. (Mus. Cuming.)

TURBINELLA CASTANEA. *Turb. testâ lanceolato-fusiformi, anfractibus longitudinaliter peculiariter rudè plicato-costatis, costis obliquis lævibus vel obsoletè striatis, canali spiraliter lirato; rufescente-aurantiâ, epidermide corneâ vividè castaneâ politâ indutâ.*

THE CHESNUT TURBINELLA. Shell lanceolately fusiform, whorls longitudinally peculiarly rudely plicately ribbed, ribs oblique, smooth or obsoletely striated, canal spirally ridged; reddish-orange, covered with a polished horny bright chesnut epidermis.

Hab. Panama (in the crevices of rocks); Cuming.

In the 'Conchologia Systematica' I figured this species as the *Turbinella acuminata*, Gray, in Supplement to Wood's 'Index Testaceologicus, but in making a more extended comparison of specimens for the present monograph, I find it to be uniformly distinct and not a modification of that species. The *T. castanea* is mainly distinguished by the peculiar rude oblique growth of the longitudinal ribs, smooth surface, and deep chesnut epidermis; whilst in the *T. acuminata* the plicated ribs are straighter, and the shell is neatly corded throughout with fine ridges.

Species 27. (Mus. Cuming.)

TURBINELLA NODATA. *Turb. testâ elongato-fusiformi, spirâ turritâ, lævigatâ, canali spiraliter lirato, liris distantibus; anfractibus supernè impressis, medio tuberculis grandibus lævibus tumidis obtusis cingulatis; aurantio-fulvâ, epidermide tenui corneâ indutâ, intus pulcherrimè roseâ.*

THE KNOBBED TURBINELLA. Shell elongately fusiform, spire turreted, smooth, canal spirally ridged, ridges distant; whorls impressed round the upper part, encircled round the middle with large smooth obtuse swollen tubercles; orange-fulvous, covered with a thin horny epidermis, interior beautifully rose-tinted.

DESHAYES, Anim. sans vert. vol. iv. p. 389.

Buccinum nodatum, Martyn.

Murex nodatus, Gmelin, Dillwyn.

Turbinella rigida, Gray.

Murex rigidus, Wood.

Hab. Panama (in crevices of rocks at low water); Cuming.

An interesting and well-defined species from the same locality as the preceding, unknown to Lamarck, though figured long before the publication of the 'Animaux sans vertèbres', by Martyn, in his beautiful portfolio of drawings entitled 'Universal Conchology'. The great scarcity of this work may afford some allowance for Mr. Gray having overlooked the figure referred to when introducing this species under a new name, both in the Supplement to Wood's 'Index Testaceologicus' and in the 'Zoology of Beechey's Voyage of the Blossom'; and the same excuse may be offered for my having repeated the error when naming this shell in the 'Conchologia Systematica.'

Species 28. (Mus. Cuming.)

TURBINELLA IMPERIALIS. *Turb. testâ ovatâ, crassâ, supernè ventricosâ, spirâ brevi; anfractibus transversim liratis, liris acutis distantibus, supernè subangulatis, ad angulum tuberculis grandibus squamatis, erectis, subrecurvis conspicuè coronatis, tuberculorum seriebus duabus prope basin quarum superiore majore; albidâ, fusco ustulatâ, tuberculis nigricantibus, epidermide fibrosâ indutâ; columellâ purpureo-fusco tinctâ.*

THE IMPERIAL TURBINELLA. Shell ovate, thick, ventricose round the upper part, spire short, whorls transversely ridged, ridges sharp and distant, subangulated round the upper part, conspicuously coronated at the angle with large erect slightly recurved squamate tubercles, with two rows of tubercles near the base, of which the upper is the larger; whitish, scorched with brown, tubercles blackish, interior white, columella stained with rich purple brown.

REEVE, Conch. Systematica, vol. ii. pl. 229. f. 4.

Hab. Cagayan, Island of Mindanao, Philippines (on the reefs); Cuming.

This species is still confounded in the British Museum with the *T. cornigera*, although well figured in the 'Conchologia Systematica', and described in detail by M. Deshayes in his edition of the 'Animaux sans vertébres'; it is scarcely necessary to enter into any comparison as the difference may be detected at a glance.

It is much to be regretted that the shells in our national museum are so imperfectly named, of this genus in particular; the collection, instead of manifesting a critical knowledge of species, enabling us to consult it as an authority, is full of misnomers, and (as this work testifies) of little service for the purposes of study

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Species 29. (Mus. Cuming.)

TURBINELLA ARMATA. *Turb. testâ oblongo-ovatâ, crassâ, ponderosâ, spirâ subexsertâ; anfractibus medio irregulariter acutè liratis et striatis, supernè concavo-impressis, tuberculis fortibus squamatis coronatis, anfractu ultimo tuberculorum serie duplici supra et infra; columellâ quinqueplicatâ, plicis alternatim majoribus; albidâ, nigro fasciatâ et maculatâ, cæruleoque peculiariter tinctâ, intus luteo-albidâ.*

THE ARMED TURBINELLA. Shell oblong-ovate, thick, ponderous, spire somewhat exserted; whorls irregularly sharply ridged and striated in the middle, concavely impressed round the upper part, coronated with strong squamate tubercles, last whorl encircled by a double row of tubercles above and below; columella five-plaited, plaits alternately larger; whitish, banded and blotched with black, and peculiarly stained with blue, interior yellowish-white.

BRODERIP, Pro. Zool. Soc., 1833.

Hab. Elizabeth Islands, Pacific Ocean (on the reefs); Cuming.

One distinguishing feature of this species is its peculiar blue-stained colouring.

Species 30. (Mus. Cuming.)

TURBINELLA CAPITELLUM. *Turb. oblongo-ovatâ, longitudinaliter varicoso-costatâ, anfractibus supernè concavo-angulatis, deinde liris squamatis, suberectis, interstitiis profundè excavatis, cingulatis, squamis ad angulum prominentibus erectis; albidâ.*

THE CHAPITER TURBINELLA. Shell oblong-ovate, longitudinally varicosely ribbed, whorls concavely angulated round the upper part, then encircled with partially erect squamate ridges, the interstices between which are deeply excavated, scales upon the angle erect and prominent; whitish.

LAMARCK, Anim. sans vert. (Deshayes edit.) vol. ix. p. 381.

Voluta capitellum, Linnæus.

Turbinella muricata, Enc. Méth.

Variety β.

Testa squamis decumbentibus.

Shell with the scales decumbent.

Turbinella mitis, Lamarck.

Hab. —— ?

There is no doubt but that M. Kiener is correct in uniting the *T. capitellum* and *mitis* of Lamarck; they are merely different states of the same species.

Species 31. (Mus. Cuming.)

TURBINELLA VEXILLULUM. *Turb. testâ ovatâ, utrinque acutè attenuatâ, anfractibus liris acutis confertis, alternatim majoribus undique cingulatis, medio angulatis, ad angulum tuberculis mucronatis armatis; nigricante-cæruleâ, liris alternatim roseis et albis; intus cærulescente-albâ.*

THE LITTLE FLAG TURBINELLA. Shell ovate, sharply attenuated at each end, whorls encircled throughout with sharp ridges alternately larger, angled in the middle, armed at the angle with pointed tubercles; very dark blue, ridges alternately pink and white, blueish white within.

REEVE, Conch. Systematica, vol. ii. pl. 229. f. 1.

Hab. —— ?

An extremely pretty species, offering so formal and gay a display of colour as to look artificially painted.

32.

34a.

33.

34b.

TURBINELLA.

PLATE VI.

Species 32. (Mus. Cuming.)

TURBINELLA CASSIDIFORMIS. *Turb. testâ ovato-turbinatâ, supernè ventricosâ, depresso-angulatâ, spirâ brevissimâ, basi attenuatâ; anfractibus supernè planis, liris rotundatis multisquamatis undique cingulatis, interstitiis excavatis, quoque squamatis, squamis ad angulum tuberculatibus, compressis, basem versus subprominentibus; columellâ concaviusculâ, triplicatâ, aperturâ elongatâ, expansâ; albidâ, ferrugineo tinctâ et fasciatâ, columellâ et aperturæ fauce rosaceis et fuscis.*

THE CASSIS-SHAPED TURBINELLA. Shell ovate, ventricose at the upper part, depressly angulated, spire very short, base attenuated; whorls flattened above, encircled throughout with rounded many-scaled ridges, interstices excavated, also scaled, scales tubercular and compressed at the angle, somewhat prominent towards the base; columella rather concave, three-plaited, aperture elongated, expanded; whitish, stained and banded with light rusty brown, columella and interior of the aperture pink and brown.

Hab. West Indies. Bahia; Kiener.

Approaching nearest in form to the following species, *T. rhinoceros*, but easily distinguished by the beautiful succession of squamate ridges with which it is encircled throughout.

Species 33. (Mus. Cuming.)

TURBINELLA RHINOCEROS. *Turb. testâ ovato-turbinatâ, crassâ, supernè ventricosâ, basi attenuatâ, spirâ brevi, acutâ; anfractibus transversim striatis, tuberculis tumidis grandibus subdistantibus supernè armatis, tuberculorum squamatorum seriebus duabus prope basin; columellâ triplicatâ, aperturâ elongatâ, subexpansâ; albidâ, castaneo-fusco variegatâ, columellâ fuscâ, plicis albis.*

THE RHINOCEROS TURBINELLA. Shell ovate, turbinated, thick, ventricose round the upper part, attenuated at the base, spire short, acute; whorls transversely striated, armed round the upper part with rather distant large swollen tubercles, and two rows of squamate tubercles near the base; columella three-plaited, aperture elongated, somewhat expanded; whitish, variegated with chesnut-brown, columella brown, plaits white.

LAMARCK, Anim. sans vert. vol. ix. p. 397.

Hab. Zanzibar; Thorne.

Characterized by its large swollen rather distant tubercles.

Species 34. (Fig. *a* and *b*, Mus. Cuming.)

TURBINELLA CÆSTUS. *Turb. testâ ovato-turbinatâ, crassâ, ponderosâ, spirâ brevi, acutè acuminatâ, anfractibus longitudinaliter subplicatis, transversim sulcatis, supernè angulatis, ad angulum fortiter tuberculatis, tuberculis rudis, obtusis, tuberculorum seriebus duabus prope basin; columellâ quadriplicatâ; albâ, epidermide crassâ fibrosâ indutâ.*

THE BOXING-CLUB TURBINELLA. Shell ovately turbinated, thick, ponderous, spire short, sharply acuminated, whorls longitudinally slightly plicated, transversely grooved, angulated round the upper part, strongly tuberculated at the angle, tubercles rude, obtuse, with two rows of tubercles near the base; columella four-plaited; white, covered with a thick fibrous epidermis.

BRODERIP, Pro. Zool. Soc. 1833.

Hab. Bay of Caraccas (in soft mud among the rocks); Cuming.

The adult example of this species has so much the appearance of a monstrously developed specimen of the *T. muricata*, that I have considered it necessary to figure the young in both instances to exhibit the difference, which though slight appears constant. The furrows are broader in this species, the tubercles larger and more swollen, whilst there is an important variation in the plaits of the columella;—in the *T. cæstus* they consist of four nearly equal plaits, in the *T. muricata* there are five, three large, and two intermediate small; and this distinction occurs in each species throughout all stages of growth.

35 a.

36.

37.

35 b.

FROM THE LIBRARY OF THE ROYAL SOCIETY

TURBINELLA.

PLATE VII.

Species 35. (Fig. *a* and *b*. Mus. Cuming.)

TURBINELLA MURICATA. *Turb. testâ ovato-turbinatâ, spirâ brevi, acuminatâ, anfractibus transversim sulcatis, supernè angulatis, ad angulum squamato-tuberculatis, tuberculorum seriebus tribus ad basin; columellâ quinqueplicatâ, plicis duabus interstitialibus minoribus; albâ, epidermide crassiusculâ fibrosâ indutâ.*

THE PRICKLY TURBINELLA. Shell ovately turbinated, spire short, acuminated, whorls transversely grooved, angulated round the upper part, squamately tubercled at the angle, with three rows of tubercles at the base; columella five-plaited, two interstitial plaits smaller; white, covered with a rather thick fibrous epidermis.

DESHAYES, Anim. sans vert. vol. ix. p. 397. *note.*

Voluta muricata, Born.

Turbinella pugillaris, Lamarck.

Hab. ——?

The tubercles in this species are more compressed squamate and prickly than in the *T. cæstus* of the preceding plate, the furrows are more numerous and less deeply excavated, the plaits of the columella are more in number, alternately larger and smaller, and the epidermis is of a lighter brown.

Species 36 (Mus. Cuming.)

TURBINELLA GIBBULA. *Turb. testâ fusiformi-turbinatâ, crassâ, solidâ, lævigatâ, ampliter umbilicatâ; anfractibus supernè concavo-depressis, tuberculis rotundatis obtusis ad angulum; columellâ obscurè plicatâ, aperturâ brevi, fauce punctato-striatâ; lutescente, fasciis castaneis angustis undique creberrimè cingulatâ.*

THE SLIGHTLY GIBBOUS TURBINELLA. Shell fusiform, turbinated, thick, solid, smooth, largely umbilicated; whorls concavely depressed round the upper part, with obtuse rounded tubercles at the angle; columella obscurely plaited, aperture short, interior striated with raised dots; yellowish, very closely encircled throughout with narrow chesnut brown bands.

DESHAYES, Anim. sans vert. vol. ix. p. 454. *note.*

Murex gibbulus, Gmelin.

Fusus filosus, Lamarck.

Hab. New Holland; Lamarck.

I have always considered, with M. Deshayes, that this species belongs properly to *Turbinella*; the columella plaits are discernible though somewhat obscure.

Species 37. (Mus. Cuming.)

TURBINELLA CERATA. *Turb. testâ fusiformi-turbinatâ, undique transversim striatâ, anfractibus supernè concavis, medio angulatis, tuberculis prominentibus compressis ad angulum armatis; albâ, ferrugineo tinctâ et maculatâ, epidermide subcorneâ indutâ*

THE WAXED TURBINELLA. Shell fusiformly turbinated, transversely striated throughout, whorls concave round the upper part, angulated in the middle, armed at the angle with prominent compressed tubercles; white, stained and spotted with rusty brown, and covered with a somewhat horny epidermis.

GRAY, Wood's Index Test. Supp. pl. 5. f. 15.

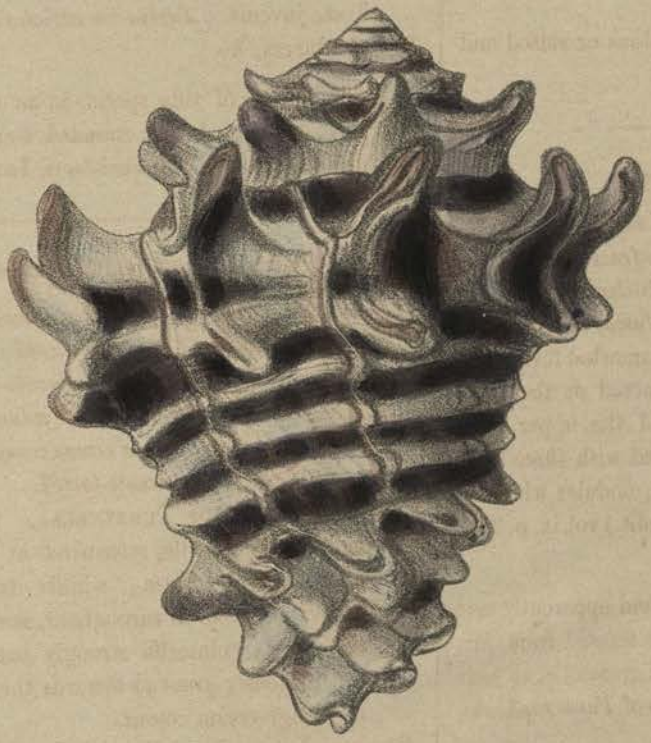
Hab. Gallapagos Islands (under stones at low water); Cuming.

The accompanying figure of this species has a much darker appearance than that in Wood's Catalogue from its being represented with the epidermis.

38 a.

38 b.

39.



40.

41 a.

41 b.

42.

TURBINELLA.

PLATE VIII.

Species 38. (Fig. 38. *a*, Mus. Cuming. 38 *b*, Mus. Taylor.)

TURBINELLA OCELLATA. *Turb. testâ ovatâ, spirâ acutâ, anfractibus medio subventricosis, supra angulatis, transversim striatis et subtiliter liratis, ad angulum obtusè nodosis; nigricante, albo undique ocellatâ, aperturâ cærulescente-albâ,*

THE OCELLATED TURBINELLA. Shell ovate, spire sharp, whorls somewhat ventricose in the middle, angulated above, transversely striated and finely ridged, obtusely noduled at the angle; blackish, ocellated throughout with white, aperture blueish-white.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. ix. p. 388.

Hab. —— ?

The white parts of the shell are nodulous or raised and have an enamel-like appearence.

Species 39. (Mus. Hanley.)

TURBINELLA TRISERIALIS. *Turb. testâ subfusiformi ovatâ, crassiusculâ, basi subcontractâ, anfractibus supernè concavo-angulatis, transversim subtiliter striatis, triseriatim fortiter nodosis; castaneo-fuscâ, nodis albis.*

THE TRISERIAL TURBINELLA. Shell somewhat fusiformly ovate, rather thick, slightly contracted at the base, whorls concavely angulated round the upper part, transversely finely striated, encircled with three rows of strong nodules; chesnut-brown, nodules white.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. ix. p. 388.

Hab. —— ?

This is a very characteristic species and apparently one of rare occurrence; the specimen here figured from Mr. Hanley's collection being the only one I remember to have seen. It has somewhat the general form of *Fusus raphanus*, but is of much more solid structure.

Species 40. (Mus. Hanley.)

TURBINELLA CORNIGERA. *Turb. testâ ovato-turbinatâ, subtrigonâ, spirâ brevi; anfractibus transversim striatis et rudè obtuse liratis, tuberculis fortibus supernè et infernè bi- tri-seriatim cingulatis, quorum superioribus elongatis, erecto-curvatis; columellâ quinqueplicatâ, plicis duabus intermediis parvis; albidâ et cærulescente-albâ, castaneo-nigricante tinctâ et fasciatâ, aperturâ pallidè aurantio-lutescente.*

THE HORNED TURBINELLA. Shell ovately turbinated, somewhat triangular, spire short; whorls transversely striated and rudely obtusely ridged, encircled round the upper and lower parts, with two or three rows of strong tubercles, of which the upper are elongated and erectly recurved; columella five-plaited, two intermediate plaits small; whitish and blueish-white, stained and banded with chesnut-black, aperture pale orange-yellow.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. ix. p. 380.

Voluta turbinella, Linnæus.

Testa juvenis. *Turbinella variolaris*, Lamarck.

Hab. Moluccas, &c.

The tubercles of this species in an immature stage of their developement, have a rounded wart-like appearance, in which state it is the *T. variolaris*, Lamarck.

Species 41. (Mus. Cuming.)

TURBINELLA TECTUM. *Turb. testâ ovatâ, medio angulatâ, utrinque attenuatâ, basi umbilicatâ; anfractibus transversim undique profundè excavato-sulcatis, medio ad angulum nodoso-tuberculatis; columellâ fortiter uniplicatâ, aperturâ labrum versus conspicuè sulcatâ; purpureo-fuscâ vel rufescente-lacteâ.*

THE GUTTERED-ROOF TURBINELLA. Shell ovate, angulated in the middle, attenuated at both ends, umbilicated at the base; whorls transversely deeply excavately grooved throughout, nodosely tubercled at the angle; columella strongly one-plaited, aperture conspicuously grooved towards the lip, purple-brown or orange-cream colour.

Buccinum tectum, Gray, Wood Index Test. Supp.

Pyrula tectum, Kiener.

Hab. Bay of Panama (in ten fathoms, sandy mud); Cuming.

This species, it will be observed, is about intermediate in its characters between *Pyrula* and *Turbinella*; I think, however, it should be referred to the latter genus on account of the strong winding plait upon the columella. It exhibits two very distinct varieties in colour, one a deep purple or chocolate-brown, the other a clear warm cream-colour.

Species 42. (Mus. Hanley.)

TURBINELLA TUBERCULATA. *Turb. testâ fusiformi-turritâ, anfractibus supernè concavo-angulatis, ad angulum et infra liris compresso-tuberculatis cingulatis; albidâ, tuberculis nigricantibus.*

THE TUBERCLED TURBINELLA. Shell fusiformly turreted, whorls concavely angulated round the upper part, encircled with compressly tubercled ridges at the angle and beneath; whitish, tubercules blueish.

BRODERIP, Pro. Zool. Soc. 1833. p. 7.

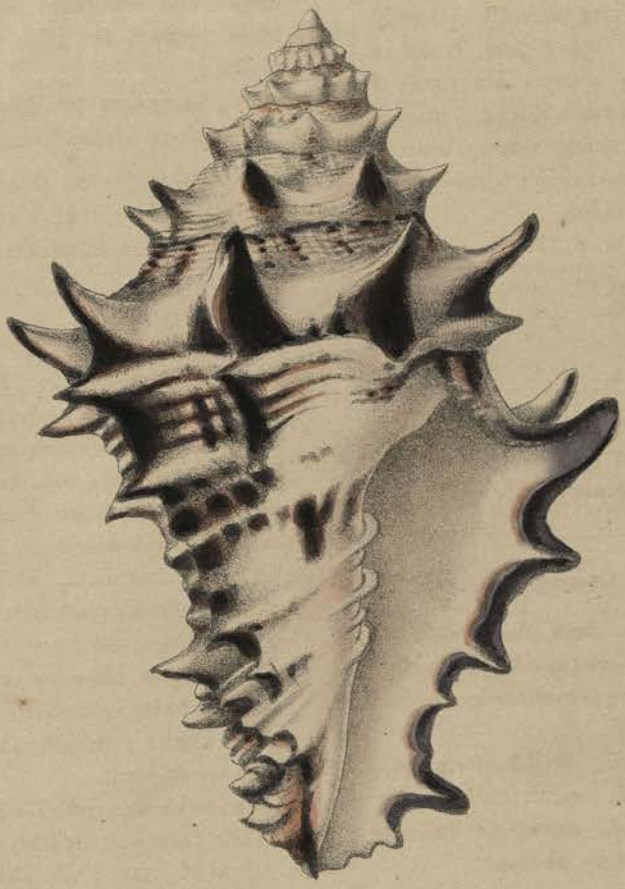
Hab. Gallapagos Islands (under stones at low water); Cuming.

The tubercles in this species are formed upon ridges and have a peculiarly compressed character.

43.

44.

45 a.



46.

47.

45 b.

48.

Sowerby, del.

Reeve Brothers.

TURBINELLA.

PLATE IX.

Species 43. (Mus. Cuming.)

TURBINELLA SPINOSA. *Turb. testâ ovato-turbinatâ, spirâ acuminatâ, anfractibus longitudinaliter plicato-costatis, supernè angulatis, medio bicarinatis, carinis compresso-spinosis, anfractûs ultimi parte inferiore basin versus contractâ, liris brevibus obtusis costas super notatâ; albidâ, fusco fasciatâ, liris interruptis albidis, aperturæ fauce roseo-violaceâ.*

THE SPINOUS TURBINELLA. Shell ovately turbinated, spire acuminated, whorls longitudinally plicately ribbed, angulated round the upper part, keeled in the middle, keels compressly spinous, lower part of the last whorl contracted towards the base, marked across the ribs with short obtuse ridges; whitish, banded with brown, interrupted ridges whitish, interior of the aperture pinkish violet.

DESHAYES, Anim. sans vert. vol. ix. p. 390.

Buccinum spinosum, Martyn.

Murex colombarium, Chemnitz.

Turbinella fasciata, Sowerby.

Hab. Friendly Islands; Martyn.

This interesting species approximates somewhat in character to the *T. carinifera*, but may be readily distinguished by its colours and more ovate prickly sculpture.

Species 44. (Mus. Cuming.)

TURBINELLA SPADICEA. *Turb. testâ fusiformi, spirâ acuminatâ, anfractibus rotundatis, longitudinaliter laticostatis, transversim liratis, interstitiis inciso-striatis; spadiceâ, aperturâ albidâ.*

THE BAY-COLOURED TURBINELLA. Shell fusiform, spire acuminated, whorls rounded, longitudinally broadly ribbed, transversely ridged, interstices indently striated; bay-coloured, aperture whitish.

Hab. —— ?

Regularly corded throughout, the interstices being deeply striated, whilst the shell is of a peculiar colour.

Species 45. (Fig. *a*, Mus. Taylor. Fig. *b*, Mus. Cuming.)

TURBINELLA NASSATULA. *Turb. testâ ovato-oblongâ, spirâ subturritâ, anfractibus supernè declivibus, longitudinaliter costatis, transversim acutè liratis, liras interstitios super prominentibus, costas super compresso-mucronatis; albidâ aut spadiceo-lutescente, costarum interstitiis saturatioribus, interdum rufo-fuscis, apice rosaceâ, aperturâ vividè violaceâ.*

THE FINE-NET TURBINELLA. Shell ovately oblong, spire somewhat turreted, whorls slanting round the upper part, longitudinally ribbed, transversely sharply ridged, ridges prominent across the interstices, compressly pointed upon the ribs; white or fawn yellow, deeper and sometimes reddish brown in the interstices between the ribs, apex pink, aperture deep violet.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. ix. p. 387.

Hab. Philippine Islands; Cuming.

It will be seen by the accompanying figures that this beautiful species is somewhat variable in colour and even in sculpture, but the differences are trifling.

Species 46. (Mus. Cuming.)

TURBINELLA CERAMICA. *Turb. testâ oblongo-ovatâ, utrinque attenuatâ, anfractibus transversim sulcatis et striatis, supernè concavis, infra tuberculis longis erectis triseriatim armatis, seriâ unicâ prope basin; columellâ quinque-plicatâ, plicis duabus interstitialibus parvis; lutescente-albâ, fusco-nigro tinctâ et fasciatâ.*

THE CERAM TURBINELLA. Shell oblong-ovate, attenuated at both ends, whorls transversely grooved and striated, concave round the upper part, armed with three rows of long erect tubercles beneath, with a single row near the base; columella five-plaited, two interstitial plaits small; yellowish white, stained and banded with brown-black.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. ix. p. 381.

Voluta Ceramica, Linnæus.

Hab. Island of Ticao, Philippines; Cuming.

This well-known species is extremely constant in its general character; the only variation of growth worth noticing is that the tubercles, instead of being sharp and erect in all specimens are sometimes short and stunted.

Species 47. (Mus. Cuming.)

TURBINELLA ACUMINATA. *Turb. testâ fusiformi, crassiusculâ, anfractibus liris conspicuis undique regulariter*

funiculatis, longitudinaliter costatis, costis latis obtusis, subobliquis, aperturæ fauce liratâ; albâ, epidermide nigricante-fuscâ indutâ.

THE ACUMINATED TURBINELLA. Shell fusiform, rather thick, whorls regularly corded throughout with conspicuous ridges, longitudinally ribbed, ribs broad and obtuse, somewhat oblique, interior of the aperture ridged; white, covered with a very dark brown epidermis.

KIENER, Icon. coq. viv. p. 28. pl. 15. f. 2.

Hab. Philippine Islands; Cuming.

A solid somewhat rudely formed shell very neatly and distinctly corded throughout.

Species 48. (Mus. Cuming.)

TURBINELLA LEUCOZONALIS. *Turb. testâ oblongo-ovatâ, crassâ, solidâ, basi contractâ, spirâ breviusculâ, subacutâ, anfractibus plano-convexis, transversim subtilissimè striatis; nigricante-castaneâ, epidermide olivaceo-fuscâ indutâ, zonulâ albidâ basin versus sæpissimè cingulatâ, zonulâ elevatiusculâ, labri limbo denticulatâ.*

THE WHITE-ZONED TURBINELLA. Shell oblong ovate, thick, solid, contracted at the base, spire rather short and somewhat acute, whorls flatly convex, transversely very finely striated; very dark chesnut, covered with an olive-brown epidermis, most frequently encircled towards the base with a narrow white zone which is slightly elevated and denticulated at the lip.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. ix. p. 385.

Hab. Honduras; Dyson.

This species, like the *T. Knorrii* and *angularis*, may also be traced into the *T. cingulifera*, from which it may be distinguished with equal propriety.

49.

50.

51.

54.

52.

53.

Sowerby, del. et lith.

on stone by Harris Brothers

TURBINELLA.

PLATE X.

Species 49. (Mus. Cuming.)

TURBINELLA ANGULARIS. *Turb. testâ ovatâ, utrinque attenuatâ, anfractibus transversim striatis et subtiliter liratis, medio ventricosis et acutè angulatis, ad angulum compresso-tuberculatis; castaneo-fuscâ, liris tuberculos super albidis.*

THE ANGULAR TURBINELLA. Shell ovate, attenuated at both ends, whorls transversely striated and finely ridged, ventricose and sharply angled in the middle, compressly tubercled at the angle; chesnut-brown, ridges across the tubercles whitish.

Hab. —— ?

This species may be traced into the *T. cingulifera*, but is constantly distinguished by its sharp angular growth and compressed tubercles.

Species 50. (Mus. Cuming.)

TURBINELLA BREVICAUDATA. *Turb. testâ elongato-turbinatâ, canali brevi, spirâ elongatâ, anfractibus rotundatis, fortiter plicato-nodatis, supernè juxta suturas peculiariter longitudinaliter plicato-striatis, liris conspicuis regularibus cingulatis, interstitiis excavatis, striâ unicâ elevatâ interveniente; albidâ, fusco tinctâ, liris striisque vividè castaneis.*

THE SHORT-TAILED TURBINELLA. Shell elongately turbinated somewhat fusiform, canal short, spire elongated, whorls rounded, strongly plicately noduled, peculiarly longitudinally plicately striated round the upper part, next the sutures, encircled with conspicuous regular ridges, the interstices between which are excavated and have a single raised stria intervening; whitish, stained with brown, ridges and striæ rich chesnut-brown.

Hab. —— ?

A very characteristic sharply corded species, having somewhat the form of the *T. lineata* but not the colour.

Species 51. (Mus. Cuming.)

TURBINELLA RUDIS. *Turb. testâ oblongo-ovatâ, solidiusculâ, transversim rudè liratâ et striatâ, anfractibus supernè concavis, medio compresso-nodatis, nodis basin versus evanidis; albâ, epidermide crassâ castaneo-nigricante indutâ.*

THE RUDE TURBINELLA. Shell oblong-ovate, rather solid, transversely rudely ridged and striated, whorls concave round the upper part, compressly noduled in the middle, nodules gradually disappearing towards the base; whitish, covered with a thick chesnut-black epidermis.

Hab. —— ?

Approaching the *T. tuberculata* in form, but readily distinguished from that species.

Species 52. (Mus. Metcalfe.)

TURBINELLA KNORRII. *Turb. elongato-turbinatâ, subfusiformi, transversim striatâ, anfractibus supernè concavo-depressis, medio convexis, nodorum serie unicâ cingulatis, aperturæ fauce liratâ; rufo-castaneâ, intus albidâ.*

KNORR'S TURBINELLA. Shell elongately turbinated, somewhat fusiform, transversely striated, whorls concavely depressed round the upper part, convex in the middle, with a single row of rounded nodules, interior of the aperture ridged; reddish-chesnut, interior white,

Hab. Honduras; Dyson.

This species like the *T. angularis* just spoken of may also be traced into *T. cingulifera*, from which it is distinguished by its more elongated growth and series of rounded nodules.

Species 53. (Mus. Metcalfe.)

TURBINELLA GRACILIS. *Turb. testâ subelongato-fusiformi, anfractibus supernè concavis, longitudinaliter obliquè rudè plicato-costatis, liris obtusis irregularibus cingulatis; rufescente-fuscâ.*

THE SLENDER TURBINELLA. Shell somewhat elongately fusiform, whorls concave round the upper part, longitudinally obliquely rudely plicately ribbed, encircled with irregular obtuse ridges; reddish-brown.

Hab. —— ?

Though closely allied to the *T. castanea* and *acuminata* it is clearly irreferable to either of those species

---

Species 54. (Mus. Brit.)

TURBINELLA FUSUS. *Turb. testâ oblongo-fusiformi, crassâ, ponderosâ, lævigatâ, anfractibus supernè concavo-angulatis, ad angulum subobsoletè nodosis; columellâ quinqueplicatâ; albâ, epidermide crassâ fibrosâ seriatim cristatâ indutâ.*

THE SPINDLE TURBINELLA. Shell oblong-fusiform, thick, ponderous, smooth, whorls concavely angulated round the upper part, somewhat obsoletely nodose at the angle; columella five-plaited; white, covered with a thick fibrous epidermis tufted in rows.

SOWERBY, Tank. Cat. App. p. 15.

Hab. —— ?

A very remarkable species, partaking of the characters *T. rapa* and *scolymos*, but too far removed from either species in form to be regarded as a variety.

55.

56 a.

56 b.

57.

58 a.

58 b.

59.

Sowerby, del. et lith.

engraved by Reeve Brothers

TURBINELLA.

PLATE XI.

Species 55. (Mus. Cuming.)

TURBINELLA INCARNATA. *Turb. testâ fusiformi, spiræ suturis subprofundis, anfractibus longitudinaliter costatis, transversim elevato-striatis, striis intra costas peculiariter fortibus, aperturâ parviusculâ, fauce striatâ; rufescente-fulvâ, costarum interstitiis fuscis, aperturâ vividè violaceâ, apice pallidè violaceo.*

THE FLESH-COLOURED TURBINELLA. Shell fusiform, sutures of the spire rather deep, whorls longitudinally ribbed, transversely elevately striated, striæ peculiarly strong between the ribs, aperture rather small, interior striated; reddish fulvous colour, brown between the ribs, aperture rich violet, apex pale violet.

DESHAYES, Kiener, Icon. Coq. viv. p. 45. pl. 18. f. 5.

Hab. Philippine Islands; Cuming.

May be recognized by the peculiarly latticed sculpture of the interstices between the ribs, and rich contrast of colouring.

Species 56. (Mus. Cuming.)

TURBINELLA AUSTRALIENSIS. *Turb. testâ ovatâ, medio ventricosâ, anfractibus longitudinaliter plicato-costatis, costis tumidis, subdistantibus, liris conspicuis acutis creberrimè cingulatis; albâ, maculis grandibus quadratis purpureo-nigris inter costas ornatâ, aperturâ rosaceo-fuscesente.*

THE AUSTRALIAN TURBINELLA. Shell ovate, ventricose in the middle, whorls longitudinally plicately ribbed, ribs swollen, rather distant, very closely encircled with sharp conspicuous ridges; white, ornamented between the ribs with square purple-black blotches, aperture pinkish-brown.

Hab. Port Essington, New Holland.

A most striking and characteristic species, far removed from any hitherto described, and forming an interesting addition to the genus.

Species 57. (Mus. Taylor.)

TURBINELLA TURRITA. *Turb. testâ subelongato-turritâ, solidiusculâ, basi leviter recurvâ, anfractibus subobliquè obtusè plicato-costatis, liris transversis conspicuis subdistantibus undique funiculatis; aperturâ parvâ, breviusculâ; rufescente-luteâ, liris castaneo-nigris.*

THE TURRETED TURBINELLA. Shell somewhat elongately turreted, rather solid, slightly recurved at the base, whorls somewhat obliquely obtusely plicately ribbed, corded throughout with rather distant conspicuous transverse ridges; aperture small, rather short; reddish-yellow, ridges chesnut-black.

DESHAYES, Anim. sans vert. vol. ix. p. 385. *note. Turbinella lineata*, Lamarck.

Hab. Island of Masbate, Philippines (on the reefs); Cuming.

Easily distinguished by the dark equi-distant ridges with which it is spirally corded throughout.

Species 58. (Mus. Cuming.)

TURBINELLA SANGUIFLUA. *Turb. testâ subelongato-fusiformi, anfractibus longitudinaliter plicato-costatis, costis latis, subdistantibus, transversim undique sulcatis; albâ sulcis longitudinalibus et transversis aurantio- vel sanguineo-rufis.*

THE BLOOD-FLOWING TURBINELLA. Shell somewhat elongately fusiform, whorls longitudinally plicately ribbed, ribs broad, rather distant, transversely grooved throughout; white, longitudinal and transverse grooves orange or blood-red.

Hab. —— ?

Distinguished in form, and by the peculiar disposition of its orange or red colouring which flows as it were among the interstices between the ribs.

Species 59. (Mus. Cuming.)

TURBINELLA VIOLACEA. *Turb. testâ subfusiformi, spirâ acuminatâ, anfractibus medio tuberculato-costatis, liris subtilibus striisque undique cingulatis, violaceo-albâ, basi nigricante-castaneâ, aperturâ rosaceo-violaceâ.*

THE VIOLET TURBINELLA. Shell somewhat fusiform, spire acuminated, whorls tubercularly ribbed in the middle, encircled throughout with fine ridges and striæ; violet-white, stained at the base with blackish-chesnut, aperture pinkish-violet.

Hab. —— ?

A delicately violet-tinged shell distinguished by a dark chesnut stain at the base.

60.

61 a.

61 b.

62.

63 a.

63 b.

64.

65 a.

65 b.

66.

LIBRARY

Sowerby, del. et lith.

m. stone by Reeve Brothers.

TURBINELLA.

PLATE XII.

Species 60. (Mus. Metcalfe.)

TURBINELLA SCABROSA. *Turb. testâ ovato-fusiformi, anfractibus longitudinaliter forticostatis, transversim liris angustis scabrosis, alternatim minoribus, creberrimè cingulatis; lutescente-lacteâ.*

THE SCABROUS TURBINELLA. Shell ovately fusiform, whorls longitudinally strongly ribbed, transversely very closely encircled with narrow scabrous ridges, alternately smaller; yellowish cream-colour.

Hab. ——?

Peculiar in sculpture, being very closely corded throughout with fine scabrous ridges alternately larger and smaller.

Fig. 61 *a* and *b* represents a specimen of *T. gemmata*, figured at Pl. II. Fig. 5, in finer condition, the smoothness of which there described, proves to have arisen from the shell being worn. The whorls of *T. gemmata* are concentrically stoutly ribbed, whilst they are closely encircled throughout with nodulous ridges and fine striæ. The colour is a deep orange-yellow, with an irregularly waved streak of black, dotted here and there with pure opal-white, passing behind the ribs from the sutures to the base.

Hab. Marquesas Islands; Capt. Rohr.

Species 62. (Mus. Taylor.)

TURBINELLA USTULATA. *Turb. testâ fusiformi, spiræ suturis subimpressis, anfractibus subrotundatis, longitudinaliter laticostatis, transversim subtiliter rugoso-liratis, medio carinatis; lutescente, ustulato-fusco tinctâ et fasciatâ, maculis fuscis ad suturas inter costas, basi nigro tinctâ*

THE SCORCHED TURBINELLA. Shell fusiform, sutures of the spire rather impressed, whorls somewhat rounded, longitudinally broadly ribbed, transversely finely roughly ridged, keeled in the middle; yellowish, tinged and banded with burnt-brown spots at the ribs, base stained with black,

Hab. ——?

Distinguished in some measure by the black stain at the base, and dark spots between the ribs which occur only next the sutures.

Species 63. (Mus. Cuming.)

TURBINELLA PHILBERTI. *Turb. testâ ovato-fusiformi, anfractibus superne plano-declivibus, transversim liratis et striatis, longitudinaliter subobtusè costatis, costis novenis confertis, ad angulum plicato-tuberculatis; rufo-fuscâ, liris et interdum costis hic illic albis, aperturâ roseo-violaceâ.*

PHILBERT'S TURBINELLA. Shell ovately fusiform, whorls flatly slanting round the upper part, transversely ridged and striated, longitudinally somewhat obtusely ribbed, ribs nine in number, close-set, plicately tubercled at the angle; reddish-brown, ridges and sometimes the ribs here and there white, aperture pinkish violet.

RECLUZ, Revue Zool. Soc. Cuvierienne, 1844, p. 48.

An eadem var. *T. tessellata* Recluz, l. c.

Hab. Philippine Islands; Cuming.

It is not improbable, so far as may be gathered from descriptions, that the *T. Philberti* and *tessellata* of M. Recluz are varieties of the very interesting species here figured, collected by Mr. Cuming in the Philippine Islands. In some specimens a dark chesnut-brown appears to be the ground colour of the shell, which is encircled here and there with sharp white lines and ridges; in others the longitudinal ribs are also white, and the chesnut-brown only appears in tessellated patches in the interstices.

Species 64. (Mus. Brit.)

TURBINELLA FILOSA. *Turb. testâ subelongato-fusiformi, anfractibus rotundatis, longitudinaliter fortiter costatis, liris prominentibus transversim undique funiculatis, aperturæ fauce liratâ; albidâ, liris transversis summitate castaneis.*

THE THREADED TURBINELLA. Shell somewhat elongately fusiform, whorls rounded, longitudinally stoutly ribbed, corded throughout with prominent transverse ridges, interior of the aperture ridged; whitish, transverse ridges chesnut-brown along the summit.

SCHUBERT and WAGNER, Conch. Cab. Supp. p. 100. pl. 227. f. 4019, 4020.

Hab. Prince Island; Kiener. Senegal; Deshayes.

Easily distinguished by the thread-like style of pattern, arising from the summit of the ridges being sharply stained with chesnut-brown upon a light ground.

Species 65. (Mus. Taylor.)

TURBINELLA PULCHELLA. *Turb. testâ fusiformi, anfractibus obliquè costatis, costis latiusculis, solidis, transversim carinatis et striatis, carinis striisque inter costas multò prominentibus; fulvo-fuscâ, aperturâ vividè violaceâ.*

THE PRETTY TURBINELLA. Shell fusiform, whorls obliquely ribbed, ribs rather broad, solid, transversely keeled and striated, keels and striæ much more prominent between the ribs, fulvous-brown, aperture rich violet.

Hab. —— ?

A bright coloured species of very solid growth.

Species 66. (Mus. Cuming.)

TURBINELLA CROCEA, *Turb. testâ subfusiformi-ovatâ, anfractibus subabbreviatis, rotundatis, transversim subtiliter liratis, longitudinaliter plicato-costatis, costis obtusis, numerosis, undecenis; albidâ, nigro suturis basique tinctâ, maculis castaneo-nigris medio uniseriatim pictâ, aperturâ croceâ.*

THE SAFFRON TURBINELLA. Shell somewhat fusiformly ovate, whorls rather short and rounded, transversely finely ridged, longitudinally plicately ribbed, ribs obtuse, numerous, eleven in number; whitish, stained with black at the base and sutures, and painted with a single row of chesnut-black spots round the middle, aperture bright saffron-yellow.

GRAY, Zool. Beechey's Voyage of the 'Blossom', p. 113.

Hab. Sandwich Islands; Nuttall.

Distinguished amongst other characters from the *T. crenulata*, by its more numerous and less prominently developed ribs and saffron-coloured aperture.

67.

68 a.

68 b.

69.

70 a.

70 b.

71.

72 a.

72 b.

73.

Sowerby, del. et lith.

on stone by Reeve Brothers

TURBINELLA.

PLATE XIII.

(Figures somewhat enlarged.)

Species 67. (Mus. Taylor.)

TURBINELLA NANA. *Turb. testâ gracili-fusiformi, anfractibus rotundatis, longitudinaliter fortiter costatis, liris parvis conspicuis regulariter cingulatâ, spadiceo-fuscâ, columellâ pallidè rosaceâ.*

THE DWARF TURBINELLA. Shell slenderly fusiform, whorls rounded, longitudinally strongly ribbed, regularly encircled with small conspicuous ridges; bay-brown, columella pinkish.

Hab. —— ?

There are faint indications of a light band about the middle of the ribs.

Species 68. (Mus. Metcalfe.)

TURBINELLA CINEREA. *Turb. testâ gracili-fusiformi, anfractibus subangulato-convexis, longitudinaliter costatis, costis, distantibus, compresso-nodatis, interstitiis striis distantibus decussatis; nigricante-cinereâ, costis albidis nigricante-fusco maculatis.*

THE ASH-COLOURED TURBINELLA. Shell slenderly fusiform, whorls somewhat angularly convex, longitudinally ribbed, ribs distant, compressly noduled, interstices crossed with distant striæ; dark ash-colour, ribs whitish, spotted with blackish-brown.

Hab. —— ?

Very peculiar in character both with respect to colour and sculpture.

Species 69. (Mus. Cuming.)

TURBINELLA ATTENUATA. *Turb. testâ subelongato-fusiformi, anfractibus striis prominentibus regulariter funiculatis, longitudinaliter fortiter tuberculato-costatis; lutescente-albâ, epidermide pallidè olivaceâ indutâ.*

THE ATTENUATED TURBINELLA. Shell somewhat elongately fusiform, whorls regularly corded with prominent striæ, longitudinally strongly tubercularly ribbed; yellowish-white, covered with a pale olive epidermis.

Hab. —— ?

Rather more narrowly attenuated than represented in the figure.

Species 70. (Mus. Metcalfe.)

TURBINELLA MACULATA. *Turb. testâ fusiformi-turbinatâ, canali breviusculâ, leviter recurvâ, anfractibus rotundatis, longitudinaliter costatis, striis elevatis undique creberrimè cingulatis, aperturâ parvâ; albidâ, maculis rubidis irregulariter tinctâ et variegatâ.*

THE BLOTCHED TURBINELLA. Shell fusiformly turbinated, canal rather short, slightly recurved, whorls rounded, longitudinally ribbed, very closely encircled throughout with raised striæ, aperture small; whitish, irregularly stained and variegated with red blotches.

Hab. —— ?

A rather solid shell, tessellated in a manner with dull red.

Species 71. (Mus. Cuming.)

TURBINELLA NASSOIDES. *Turb. testâ subfusiformi-ovatâ, anfractibus rotundatis longitudinaliter conspicuè costatis, liris subtilibus creberrimè funiculatis; rufescente-fuscâ, zonulâ albâ medio cingulatâ, apice rosaceâ, columellâ pallidè rosaceâ.*

THE NASSA-LIKE TURBINELLA. Shell somewhat fusiformly ovate, whorls rounded, longitudinally conspicuously ribbed, very closely corded throughout with fine ridges; light reddish brown, encircled round the middle with a white zone, apex pink, columella pale pink.

Hab. Island of Ticao, Philippines (on the reefs); Cuming.

The plaits are very obscure in this species, but I still think it should be referred to the present genus.

Species 72. (Mus. Cuming.)

TURBINELLA FASTIGIUM. *Turb. testâ lanceolato-fusiformi, striis elevatis undiquè nitidè cingulatâ; anfractibus subhexagonis, longitudinaliter plicato-costatis, costis distantibus, rudis, subirregularibus; rubido-fuscescente.*

THE PINNACLE TURBINELLA. Shell lanceolately fusiform, neatly encircled throughout with raised striæ; whorls nearly hexagonal, longitudinally plicately ribbed, ribs distant, rude, somewhat irregular; light reddish brown.

Hab. —— ?

A very characteristic lanceolate shell, apparently of

immature growth; in an adult state the canal would be probably longer.

Species 73. (Mus. Taylor.)

TURBINELLA LAUTA. *Turb. testâ ovatâ, subobesâ, canali brevi, leviter recurvâ; anfractibus longitudinaliter subobsoletè plicato-costatis, transversim undique sulcatis; coccineo-rufâ, sulcis fuscis, costis hic illic albis, aperturâ aurantiâ.*

THE GAY TURBINELLA. Shell ovate, rather stout, canal short, slightly recurved; whorls longitudinally somewhat obsoletely plicately ribbed, transversely grooved throughout; scarlet-red, grooves brown, ribs here and there white, aperture orange.

Hab. ——?

A very pretty species most distinctly characterized.

TURBINELLA.

	Plate.	Species.
acuminata, *Kiener*	IX.	47
angularis, *Reeve*	X.	49
aplustre (*Buccinum*), Martyn	III.	16
armata, *Broderip*	V.	29
attenuata, *Reeve*	XIII.	69
Australiensis, *Reeve*	XI.	56
Barclayi, *Reeve*	IV.	20
Belcheri, *Reeve*	IV.	22
brevicaudata, *Reeve*	X.	50
cæstus, *Broderip*	VI.	34
candelabrum, *Reeve*	II.	9
capitellum (*Voluta*), Linn.	V.	30
carinifera, *Lamarck*	III.	14
Cassidiformis, *Valenc.*	VI.	32
castanea, *Reeve*	V.	26
Ceramica (*Voluta*), Linn.	IX.	46
cerata, *Gray*	VII.	37
cinerea, *Reeve*	XIII.	68
cingulifera, *Lamarck*	III.	17
concentrica, *Reeve*	I.	2
cornigera, *Lamarck*	VIII.	40
craticulata (*Murex*), Linn.	II.	7
crenulata, *Kiener*	IV.	24
crocea, *Gray*	XII.	66
fasciata, Sowerby	IX.	43
fastigium, *Reeve*	XIII.	72
filosa, *Schubert*	XII.	64
fusus, *Sowerby*	X.	54
gemmata, *Reeve*	II.	5
gibbula (*Murex*), Gmelin	VII.	36
globulus (*Voluta*), Chemn.	II.	11
gracilis, *Reeve*	X.	53
imperialis, *Reeve*	V.	28
incarnata, *Deshayes*	XI.	55
infundibulum (*Murex*), Gmelin	I.	3
Knorrii, *Deshayes*	X.	52
lanceolata, *Reeve*	III.	12
lauta, *Reeve*	XIII.	73
leucozonalis, *Lamarck*	IX.	48
lineata, Lamarck	XI.	57
lyrata, *Reeve*	III.	13
maculata, *Reeve*	XIII.	70
mitis, Lamarck	V.	30
muricata (*Voluta*), Born	VII.	35
muricata, Enc. Méth.	V.	30
nana, *Reeve*	XIII.	67
nassatula, *Lamarck*	IX.	45
Nassoides, *Reeve*	XIII.	71
nodata (*Buccinum*), Martyn	V.	27
occellata, *Lamarck*	VIII.	38
ovoidea, *Kiener*	IV.	23
Philberti, *Recluz*	XII.	63
picta, *Reeve*	IV.	19
polygona (*Murex*), Gmelin	I.	1
prismatica (*Buc.*), Martyn	V.	25
pugillaris, Lamarck	VII.	35
pulchella, *Reeve*	XII.	65
pyrum (*Voluta*), Linn.	III.	15
rapa, *Lamarck*	II.	8
recurvirostris, *Schubert*	II.	10
rhinoceros, *Lamarck*	VI.	33
rigida, Gray	V.	27
rudis, *Reeve*	X.	51
rustica, Lamarck	III.	18
sanguiflua, *Reeve*	XI.	58
scabrosa, *Reeve*	XII.	60
scolymos (*Murex*), Gmelin	I.	4
smaragdulus (*Buc.*), Linn.	III.	18
spadicea, *Reeve*	IX.	44
spinosa (*Buccinum*), Martyn	IX.	43
tectum (*Buccinum*), Gray	VIII.	41
tessellata, Recluz	XII.	63
Thersites, *Reeve*	IV.	21
triserialis, *Lamarck*	VIII.	39
tuberculata, *Broderip*	VIII.	42
turrita (*Voluta*), Gmelin	XI.	57
ustulata, *Reeve*	XII.	62
varicosa, *Reeve*	II.	6
variolaris, Lamarck	VIII.	40
vexillulum, *Reeve*	V.	31
violacea, *Reeve*	XI.	59

MONOGRAPH

OF THE GENUS

FASCIOLARIA.

"Admiring
Their shape, their colour, and attractive grace."—*Milton.*

1a.

1b.

3.

2a.

2b.

G.Sowerby, del. et lith.

Reeve

FASCIOLARIA.

PLATE I.

Genus FASCIOLARIA, *Lamarck.*

Testa fusiformis vel pyriformis, interdum magnitudine perampla, basi plus minusve canaliculata, anfractibus sæpissimè tuberculatis, nunquam varicosis; columellâ plus minusve arcuatâ, basi obliquè plicatâ, plicis inferioribus majoribus; aperturæ fauce striis prominentibus elevatis creberrimè radiatâ. Operculum corneum.

Shell fusiform or pear-shaped, sometimes of very large size, more or less channelled at the base, whorls most frequently tuberculated, never varicose; columella more or less arched, obliquely plaited at the base, lower plates the larger, interior of the aperture very closely rayed with prominent elevated striæ. Operculum horny.

The *Fasciolariæ* though limited in species, appear to constitute a very natural genus, easily distinguished from the *Fusi* by their larger and more solid tubercular growth and brilliancy of colour; there are also characters in the style of marking, which are not unimportant. In most of the species the shell is encircled by fine blackish lines engraved on the surface, arranged two and two throughout, and the interior of the aperture is generally radiated with strong elevated red lines. Another character by which *Fasciolaria* may be distinguished from *Fusus*, consists in the columella being always distinctly obliquely plaited at the base, mostly very strongly so; according to M. Quoy, the animals are nearly similar, and it is this affinity which has induced that eminent naturalist to connect the two genera in one.

The *Fasciolariæ* are few in number but pretty generally distributed; among the localities noted in the following monograph are Ceylon and the Philippine Islands, Australia, Western Africa, Panama, Mexico and West Columbia, Honduras and the West Indies, Mediterranean and the Cape de Verd Islands.

Species 1. (Mus. Cuming.)

FASCIOLARIA PAPILLOSA, young.

For description of this species see Plate VII.

Species 2. (Mus. Hanley.)

FASCIOLARIA LUGUBRIS. *Fasc. testâ fusiformi, transversim irregulariter sulcatâ, anfractibus supernè angulato-declivibus, leviter concavis, ad angulum obtusè carinatis, apicem versus obsoletè nodatis; columellâ subexcavatâ, lirâ callosâ supernè munitâ; carneo-fuscescente, epidermide olivaceo-fuscâ indutâ.*

THE MOURNFUL FASCIOLARIA. Shell fusiform, transversely irregularly grooved, whorls angularly slanting and slightly concave round the upper part, keeled at the angle, obsoletely noduled towards the apex; columella somewhat excavated, furnished at the upper part with a strong callous ridge; fleshy-brown, covered with a dark olive-brown epidermis.

ADAMS, and REEVE, Moll. Voy. Samarang.

Hab. Cape of Good Hope (found at low water among loose stones); Adams.

A well-marked species, quite unlike any of this limited genus hitherto described, though of very simple character; in young specimens the interior is of a chesnut-brown colour and the upper portion of the whorls less angulated. Three specimens were collected during the voyage of the 'Samarang', but the one here figured from Mr. Hanley's collection, formerly in the possession of the Rev. F. J. Stainforth, is in finer condition and the only other example I have seen.

Species 3. (Mus. Cuming.)

FASCIOLARIA PRINCEPS. *Fasc. testâ fusiformi, subamplâ, spiraliter liratâ, liris subdistantibus compresso-nodosis, interstitiis regulariter concavis; anfractibus prope suturas concavis, deinde ventricosis, vix angulatis, nodis liræ medianæ prominentibus, apicem versus conspicuis et rotundatis; aurantio-lacteâ, epidermide rufo-castaneâ crassâ indutâ, columellâ vividè aurantio-rufâ, aperturâ peculiariter rufo-lineatâ.*

THE CHIEF FASCIOLARIA. Shell fusiform, rather large, spirally ridged, ridges somewhat distant, compressly nodose, interstices regularly concave; whorls concave near the sutures, then ventricose, scarcely angulated, nodules of the middle ridge more prominent, conspicuous and rounded towards the apex; orange cream-colour, covered with a thick red-chesnut epidermis, columella bright orange-red, aperture peculiarly marked with red lines.

SOWERBY, Tankerville Cat. App. p. xvi.

Fasciolaria aurantiaca, Sowerby (not of Lamarck) by mistake in Genera of Shells.

Hab. Coast of Peru; Cuming.

It is scarcely necessary to observe that this magnificent species is remarkable for the richness of its colouring, the columella a deep orange-red, the epidermis a fine dark red-chesnut.

---

4 a.

5 a.

5 b.

4 b.

FASCIOLARIA.

PLATE II.

Species 4. (Fig. *a* and *b*, Mus. Cuming.)

FASCIOLARIA FILAMENTOSA. *Fasc. testâ fusiformi, spirâ subacuminatâ, anfractibus undique spiraliter sulcatis, sulcis binis, supernè declivibus, medio subangulatis, ad angulum plus minusve tuberculatis; cæruleo-albidâ, rufo, fusco, cinereove variegatâ et striatâ, sulcis spiralibus nigricantibus; aperturâ fortiter rufo-lineatâ.*

THE THREADED FASCIOLARIA. Shell fusiform, spire somewhat acuminated, whorls spirally grooved throughout, grooves in pairs, slanting round the upper part, slightly angulated in the middle, more or less tubercled at the angle; blueish-white, variegated and streaked with red, brown, or ash-colour, spiral grooves blackish, aperture strongly marked with red lines.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. ix. p. 434. *Fusus filamentosus*, Martini.

Hab. Ceylon. Philippine Islands; Cuming.

It is a peculiarity in the colouring of this well known species, that the darker tints of red or ash-brown pass in a waved longitudinal direction over the tubercles.

Species 5. (Fig. *a* and *b*, Mus. Cuming.)

FASCIOLARIA AURANTIACA. *Fasc. testâ fusiformi, subventricosâ, anfractibus spiraliter sulcatis, sulcis binis distantibus, supernè declivibus, medio angulatis, ad angulum tuberculatis, tuberculis minoribus tumidiusculis, hic illic, præsertim basin versus, notatis; cinereo- vel rufo-aurantiâ maculis irregularibus albis variegatâ, intus niveâ.*

THE ORANGE FASCIOLARIA. Shell fusiform, somewhat ventricose, whorls spirally grooved, grooves distant, arranged in pairs, slanting at the upper part, angulated round the middle, tuberculated at the angle, marked here and there, especially towards the base, with swollen tubercles; ash-coloured or reddish-orange, mottled with irregular white blotches, interior pure white.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. ix. p. 435.

Hab. ——?

This beautiful species described by Lamarck as being vulgarly called the 'Persian vest' is still one of great rarity; it is of a buff or reddish-orange mottled with white, and the interstices between the grooves are more or less marked with obtuse swollen tubercles.

October, 1847.

6.

7 a.

7 b.

Sowerby, del. et lith.

Reeve,

FASCIOLARIA.

PLATE III.

Species 6. (Mus. Hankey.)

FASCIOLARIA GRANOSA. *Fasc. testâ subpyriformi, spirâ acuminatâ, apice papillari; anfractibus spiraliter irregulariter striatis et sulcatis, supernè concavo-depressis, ad angulum tumidiusculis et fortiter tuberculatis, labro margine plicato-dentato; luteo-fuscescente, epidermide fuscâ crassâ, peculiariter granosâ, indutâ, columellâ et aperturæ limbo aurantio-rufescentibus.*

THE GRANOSE FASCIOLARIA. Shell somewhat pyriform, spire acuminated, papillary at the apex; whorls irregularly spirally striated and grooved, concavely depressed round the upper part, slightly swollen and strongly tuberculated at the angle, lip plicately toothed at the margin; yellowish-brown, covered with a thick peculiarly granose brown epidermis, columella and edge of the aperture orange-red.

BRODERIP, Pro. Zool. Soc. 1834. p. 32.

Hab. Panama; Cuming, Hankey.

The *F. granosa* is chiefly remarkable, as its name indicates, on account of the epidermis being raised throughout in fine solid conspicuous grains, a peculiarity which I do not remember to have observed in any other shell; they are developed in a prominent degree in all stages of growth, and have almost the appearance of some extraneous coralline deposite. The magnificent specimen here figured, far exceeding in size and richness of colour any of those originally described, was recently collected by Capt. Hankey R.N., during the voyage of H.M.S. Collingwood.

Species 7. (Mus. Cuming.)

FASCIOLARIA SALMO. *Fasc. testâ pyriformi, apice papillari, anfractibus ventricosis, supernè concavo-depressis et spiraliter striatis, ad angulum acutè tuberculatis, infernè contractis; columellâ peculiariter excavatâ, labro margine dentato; albicante, epidermide corneâ olivaceâ indutâ, columellâ et aperturæ limbo eximiè colore salmonis.*

THE SALMON FASCIOLARIA. Shell pyriform, papillary at the apex, whorls ventricose, concavely depressed and spirally striated round the upper part, sharply tuberculated at the angle, contracted at the lower; columella peculiarly excavated, edge of the lip toothed; whitish, covered with an olive horny epidermis, columella and edge of the aperture delicate salmon-colour.

DESHAYES, Anim. sans vert. (Deshayes' edit.) v. ix. p. 438.

Pyrula salmo, Gray.

Murex salmo, Wood.

Fasciolaria Valenciennesii, Kiener.

Hab. Real Llejos, Central America; Cuming.

An extremely interesting species distinguished by its complete pyriform growth, excavated delicate salmon-coloured columella and rich olive horny epidermis. This and the preceding species, deprived of epidermis, are often confused the one for the other, they will, however, be found, from the accompanying figures and descriptions, to differ abundantly.

8 a.

8 b.

9.

10 a.

10 b.

Sowerby, del. et lith.

LIBRARY

Reeve

FASCIOLARIA.

PLATE IV.

Species 8. (Mus. Brit.)

FASCIOLARIA FUSIFORMIS. *Fasc. testâ fusiformi, spirâ subacuminatâ, anfractibus undique spiraliter sulcatis, apicem versus rudè plicato-costatis, columellâ arcuatâ, lirâ callosâ supernè munitâ; fuscescente, epidermide rufescente-fuscâ indutâ, aperturâ albidâ.*

THE FUSIFORM FASCIOLARIA. Shell fusiform, spire somewhat acuminated, whorls spirally grooved throughout, rudely plicately ribbed towards the apex, columella arched, furnished with a callous ridge at the upper part; pale brown, covered with a reddish-brown epidermis, aperture whitish.

VALENCIENNES, Kiener, Icon. coq. viv. p. 13. pl. 4. f. 2.

Hab. New Holland; Kiener.

Not distinguished by any peculiarity of marking, but well characterized in form.

Species 9. (Mus. Cuming.)

FASCIOLARIA TULIPA. *Fasc. testâ fusiformi, medio ventricosâ, spiraliter sulcatâ, sulcis irregularibus, anfractibus valdè convexis, margine juxta suturas crenatis; cærulescente-albâ, cinereo-olivaceo aut rufescente maculatâ et variegatâ, lineis nigris interdum spiraliter cingulatâ, aperturæ fauce cinereo-albicante vel roseo-incarnato.*

THE TULIP FASCIOLARIA. Shell fusiform, ventricose in the middle, spirally grooved, grooves irregular, whorls very convex, crenated along the margin next the sutures; blueish-white, blotched and variegated with ash-olive or reddish, sometimes spirally encircled with black lines, interior of the aperture ash-white or pinkish flesh-colour.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. ix. p. 432.

Murex tulipa, Linnæus.

Hab. St. Thomas, West Indies; Gruner. Honduras; Dyson.

It is scarcely necessary to observe that this ancient and well-known species is exceedingly variable in colour; most frequently it is found of a blueish or ash-white, variegated and blotched with olive or red, with or without black spiral lines; sometimes it is of a pure smooth mahogany-red, conspicuously painted with black spiral lines without any spots or blotches of colour.

Species 10. (Fig. *a* and *b*, Mus. Cuming.)

FASCIOLARIA DISTANS. *Fasc. testâ fusiformi, solidiusculâ, medio subventricosâ, anfractibus convexis, lævibus, politis, basi spiraliter liratis; albidâ, maculis cæruleo-viridibus vel aurantio-rufis pulcherrimè pictâ, lineis nigris latiusculis distantibus conspicuè cingulatâ.*

THE DISTANT FASCIOLARIA. Shell fusiform, rather solid, slightly ventricose in the middle, whorls convex, smooth, polished, spirally ridged at the base; whitish, beautifully painted with blueish-green, or orange-red blotches, conspicuously encircled with rather broad distant black lines.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. ix. p. 433.

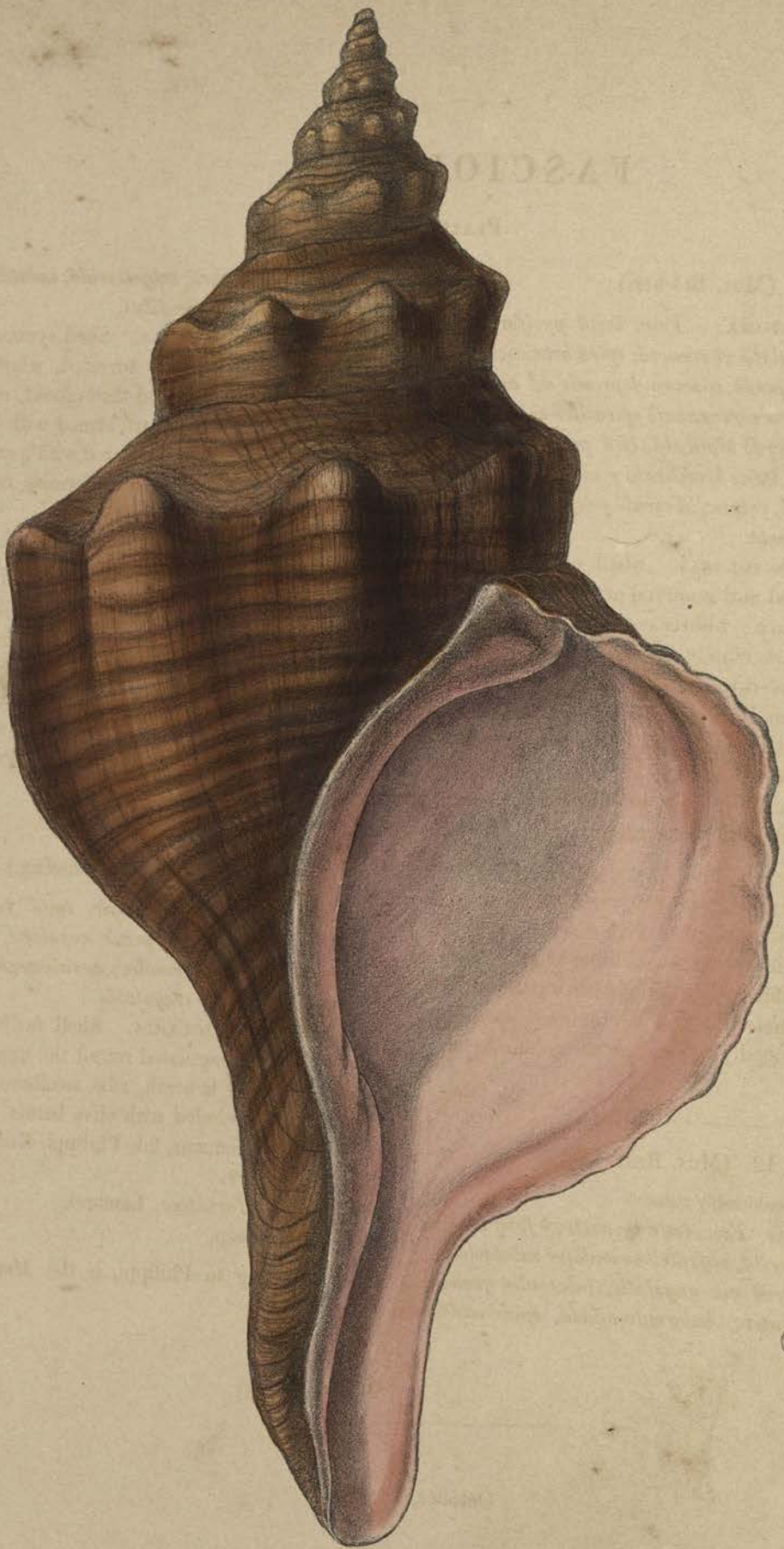
Hab. Gulf of Mexico.

Although this species approximates very closely to the preceding in general aspect, it differs from it *in toto*; it is uniformly smaller in size, is of a peculiar smooth porcelain texture, extremely delicately painted and always spirally ruled, as it were, with strong black lines situated rather distant from each other. Another important feature of the *F. distans*, consists in the columella having only a single oblique plait at the extreme base.

October, 1847.

11 a.

11 b.



12.

13 a.

13 b.

FASCIOLARIA.

PLATE V.

Species 11. (Mus. Belcher.)

FASCIOLARIA PORPHYROSTOMA. *Fasc. testâ pyriformi, basi attenuato-canaliculatâ et recurvâ, spirâ breviusculâ acutâ; anfractibus supernè concavo-depressis ad angulum crebrinodatis, basem versus acutè spiraliter sulcatis; columellâ arcuatâ, infernè biplicatâ, lirâ parvâ callosâ supernè munitâ, labro intus brevilirato; albidâ, epidermide lutescente indutâ, columellâ vividè purpureâ, aperturæ fauce purpurascente.*

THE PURPLE-MOUTH FASCIOLARIA. Shell pear-shaped, attenuately channelled and recurved at the base, spire rather short and sharp; whorls concavely depressed round the upper part, closely noduled at the angle, sharply spirally grooved towards the base; columella arched, two-plaited at the lower part, furnished with a small callous ridge at the upper, lip marked within with short ridges; whitish, covered with a yellowish epidermis, columella rich-purple, interior pale-purple.

ADAMS, and REEVE, Moll. Voy. Samarang.

Hab. Eastern Seas.

This interesting little shell has very much the form of *Fusus afer*, it might also be referred with equal propriety to the genus *Pyrula*, still it has an oblique plait at the base of the columella, sufficiently developed to entitle it to a place among the *Fasciolariæ*. As a prominent specific character may be mentioned the rich purple colouring of the columella.

Species 12. (Mus. Brit.)

(Fig. considerably reduced).

FASCIOLARIA GIGANTEA. *Fasc. testâ symmetricè fusiformi, spirâ acuminato-turritâ, anfractibus undique subobsoletè obtusè liratis, supernè vix angulatis, tuberculis grandibus tumidis armatis; incarnato-albidâ, epidermide corneâ luteo-castaneâ, subpellucidâ, indutâ, columellâ et aperturæ fauce rufescentibus.*

THE GIGANTIC FASCIOLARIA. Shell symmetrically fusiform, spire acuminately turreted, whorls somewhat obsoletely obtusely ridged throughout, scarcely angulated round the upper part, armed with large swollen tubercles; fleshy-white, covered with a subtransparent yellowish-chesnut horny epidermis, columella and interior of the aperture reddish.

KIENER, Icon. coq. viv. *Fasciolaria.* p. 5. pl. 10. and 11.

Hab. South Seas; Brit. Mus. Pacific Ocean? Kiener

This gigantic species of which there is a specimen in the British Museum nearly two feet in length, approximates in general aspect to the *F. princeps*; the aperture is distinguished by the same warm orange-red tone of colour but is not lineated, the epidermis is more of a yellowish-olive horny character, and the tubercles more swollen and prominent.

Species 13. (Mus. Cuming.)

FASCIOLARIA LIGNARIA. *Fasc. testâ fusiformi, spirâ turritâ, anfractibus supernè angulatis, infra tuberculato-costatis, costis tumidis; cærulescente-albidâ, fasciis olivaceis interdum cingulatâ.*

THE WOODEN FASCIOLARIA. Shell fusiform, spire turreted, whorls angulated round the upper part, tubercularly ribbed beneath, ribs swollen; blueish-white, sometimes encircled with olive bands.

Murex lignarius Linnæus, fide Philippi, Enum. Moll. Sicil. vol. ii. p. 177.

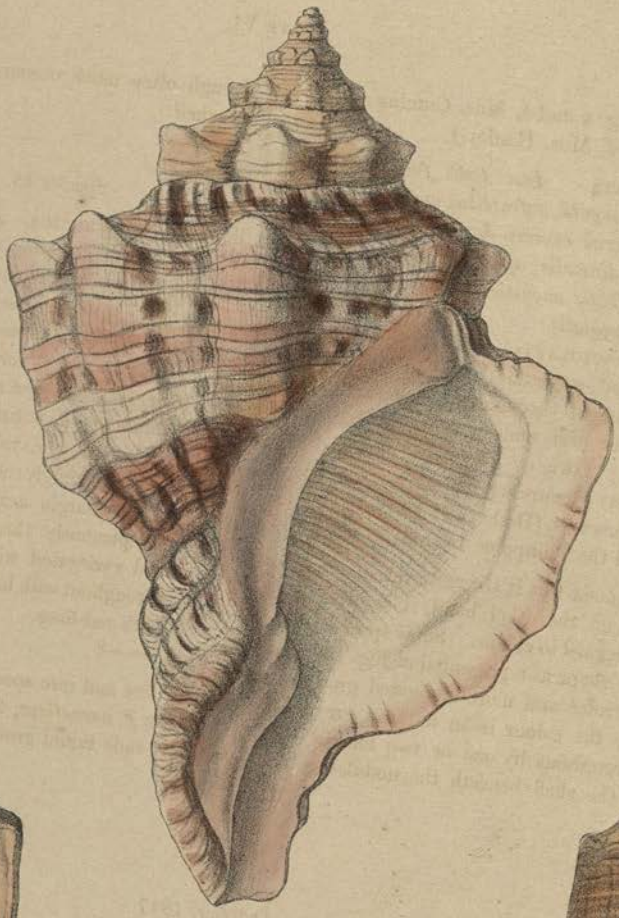
Fasciolaria Tarentina, Lamarck.

Hab. Mediterranean.

This, according to Philippi, is the *Murex lignarius* of Linnæus.

14a.

14b.



15.

14c.

14d.

Sowerby, del. et lith.

Reeve, imp.

FASCIOLARIA.

PLATE VI.

Species 14. (Fig. *a* and *b*, Mus. Cuming; *c* and *d*, Mus. Hanley.)

FASCIOLARIA CORONATA. *Fasc testâ fusiformi, nunc abbreviatâ, nunc elongatâ, anfractibus undique spiraliter obtuso-liratis, supernè concavo-declivibus, ad angulum nodosis, nodis tumidiusculis; spadiceâ aut cinereo-griseâ, zonulis duabus albidis angustis plus minusve obscuris infra angulum cingulatis.*

THE CORONATED FASCIOLARIA. Shell fusiform, sometimes abbreviated, sometimes elongated, whorls spirally obtusely ridged throughout, concavely slanting round the upper part, nodose at the angle, nodules rather swollen; fawn or ashy-grey, encircled with two more or less obscure whitish narrow zones.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. ix. p. 435.

Hab. Australia and the Philippine Islands.

Of all the *Fasciolariæ* this is the most variable in respect to growth, whilst on the other hand, it is, perhaps, the most constant in regard to colour. Some specimens are of a pyriform spindle-shape as represented at Fig. 14, *c* and *d*, others are of a slender and more elongated growth as at Fig. 14, *a* and *b*; the colour is an uniform grey or fawn distinguished throughout by one or two narrow whitish zones encircling the shell beneath the nodules, to which, though often much obscured, some importance should be attached.

Species 15. (Mus. Cuming.)

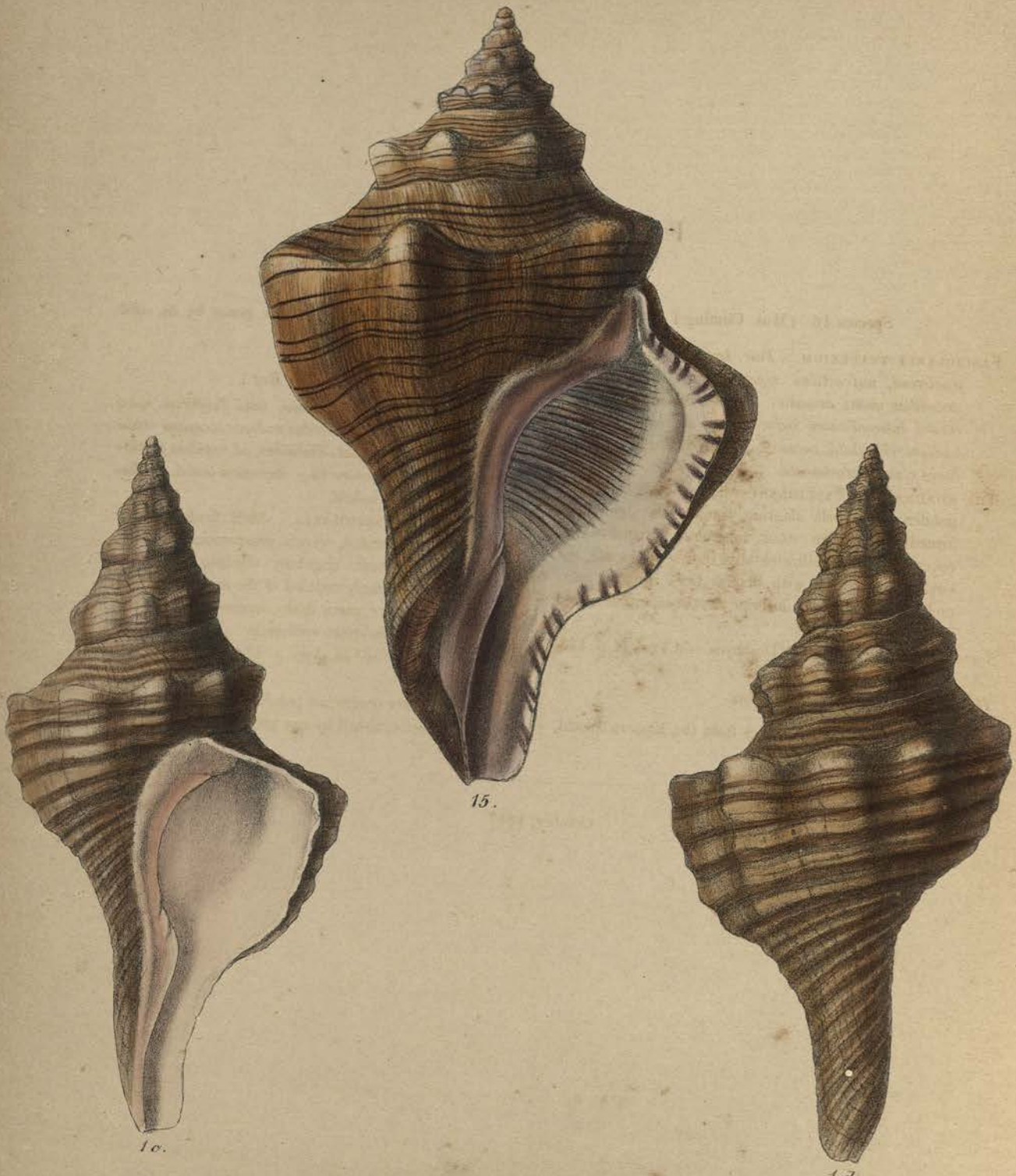
FASCIOLARIA PERSICA. *Fasc. testâ obeso-fusiformi, solidâ, rudi, spirâ breviusculâ, acutâ, turritâ, anfractibus tumidis, fortiter tuberculato-costatis, margine juxta suturas plicato-crenatis; columellâ crenatâ, basi conspicuè triplicatâ; rosaceo-albidâ, roseo et purpureo-ferrugineo tinctâ et variegatâ, lineis fuscis binis undiquè cingulatâ, aperturâ rufo-lineatâ.*

THE PERSIAN FASCIOLARIA. Shell stoutly fusiform, solid, rude, spire rather short, sharp, turreted, whorls swollen, strongly tubercularly ribbed, plicately crenated at the margin next the sutures; columella arched, conspicuously three-plaited; pinkish-white, stained and variegated with pink and purple-rust, encircled throughout with brown lines in pairs, aperture marked with red-lines.

Hab. ——?

A fine and rare species approximating in some measure to the *F. aurantiaca*, though perfectly distinguished by its short rude tumid growth and stout tubercular ribs.

October, 1847.



15.

1 c.

1 d.

Sowerby, del. et lith.

Reeve, imp.

FASCIOLARIA.

PLATE VII.

Species 16. (Mus. Cuming.)

FASCIOLARIA TRAPEZIUM. *Fasc. testâ fusiformi, crassâ, ponderosâ, anfractibus supernè declivibus, tuberculis grandibus obesis armatis; cæruleo-albidâ, epidermide corneâ luteo-olivaceâ indutâ, lineis nigricantibus binis undique cingulatâ, columellâ purpureo-fuscâ, aperturæ fauce vividè rufo-lineatâ.*

THE QUADRANGLE FASCIOLARIA. Shell fusiform, thick, ponderous, whorls slanting round the upper part, armed with large stout tubercles; blueish-white, covered with a yellowish-olive horny epidermis, encircled throughout with blueish lines in pairs, columella purple-brown, interior of the aperture rayed with strong red-lines.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. ix. p. 433. *Murex trapezium*, Linnæus.

Hab. Philippine Islands; Cuming.

An extremely common species from the Eastern World, distinguished above all others of the genus by its solid ponderous growth.

Species 1. (Mus. Brit.)

FASCIOLARIA PAPILLOSA. *Fasc. testâ fusiformi, spirâ acuminato-turritâ, anfractibus undique conspicuè obtusè liratis, supernè angulato-declivibus, ad angulum fortiter nodatis, infernè contractis; incarnato-lacteâ, epidermide luteo-fuscâ indutâ.*

THE PAPILLOSE FASCIOLARIA. Shell fusiform, spire acuminately turreted, whorls conspicuously obtusely ridged throughout, angularly slanting round the upper part, strongly noduled at the angle, contracted round the lower part; fleshy cream-colour, covered with a yellowish-brown epidermis.

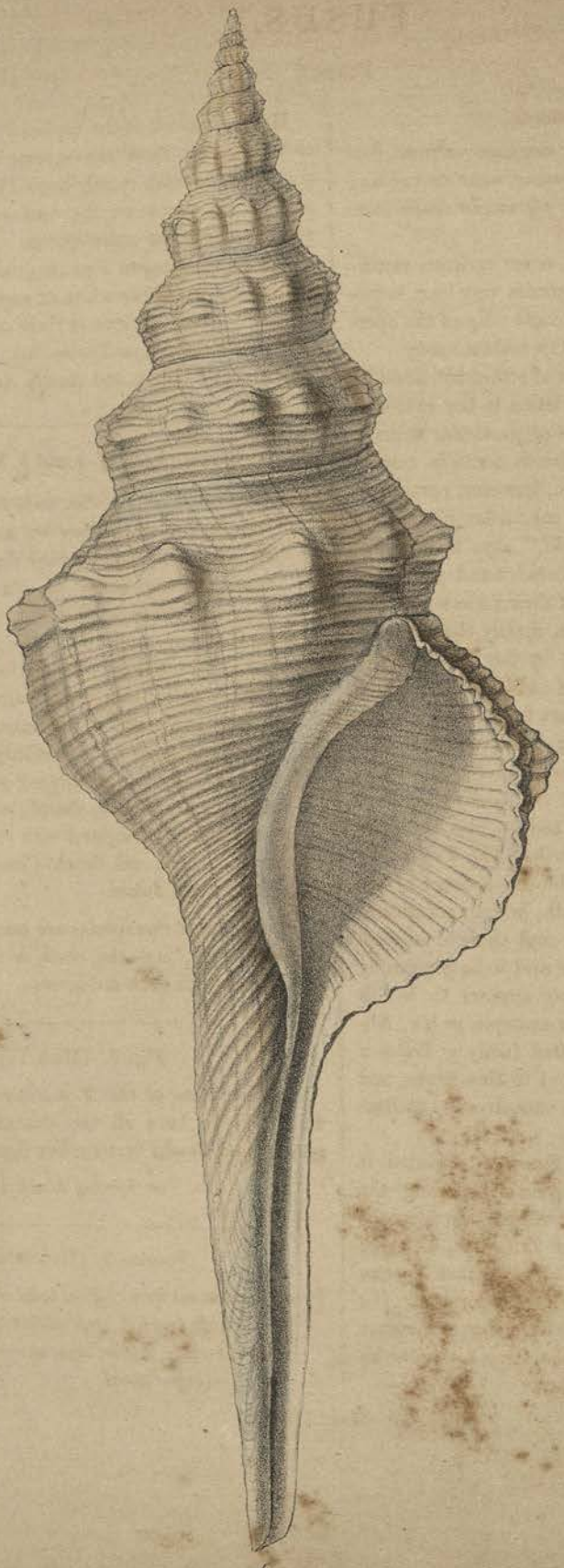
SOWERBY, Tankerville Cat. App. p. 16.

Hab. —— ?

A species of rare occurrence peculiar in form and sculpture but not distinguished by any pattern of colouring.

October, 1847.

1 a.



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1 b.

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Sowerby, del. et lith.

Reeve, imp.

FUSUS.

PLATE I.

Genus FUSUS, *Lamarck*.

Testa ovato- vel elongato-fusiformis, nunquam varicosa, basi canaliculata, canali nunc longissimo, nunc brevissimo; columellâ lævi; aperturæ labro plerumque denticulato. Operculum corneum.

Shell ovately or elongately fusiform, never varicose, canaliculated at the base, canal sometimes very long, sometimes very short; columella smooth; lip of the aperture generally denticulated. Operculum horny.

The genus *Fusus* is considered one of somewhat doubtful importance owing to the slight variation in the character of the animal, but it is nevertheless of particular value in the distribution of the great canaliferous series in respect of the shell. M. Deshayes does not, however, participate in this opinion. "Take away the columellar plaits from the greater portion of the *Turbinelli*," says the learned editor of the 'Animaux sans vertébres' "and you make *Fusi* of them; deprive the *Tritons* of their varices and they become *Fusi*". Lamarck, it is true, mainly characterized the genera of this extensive family by the disposition of the varices and columellar plaits, but each is distinguished by an association of peculiarities apart from these.

The *Tritons* are peculiar in their form, sculpture and colouring irrespective of the varices; the *Fasciolariæ* in their size, development and style of painting without reference to the columellar plaits, and so also the *Turbinelli* in their solid tubercular growth. The *Fusi* under consideration are not less remarkable on account of the beautifully elongated spindle growth, which constitutes the typical character of the genus; and there is no form in *Triton* or *Turbinellus* which can be said to be generically the same. The character of *Fusus* appears to be ill-understood by authors; Philippi, for example, in his 'Abbildungen' refers the *Triton Chemnitzii* (truly a *Triton* if we look only so far as the epidermis) to this genus, and several other species belonging most unequivocally to *Buccinum* and *Turbinellus*.

If any subdivision of the genus *Fusus* be admitted, it may be made in favour of that division including the *F. antiquus, despectus*, &c.; these have been already connected by Muller, under the title of *Tritonium*, with the *Buccinum undatum*, but their affinity with that species appears to be one equally remote with the former. The *F. Nifat, buccinatus* and *aculeiformis* have also a character peculiar to them, and might with the same propriety be united under a distinct sub-generic head.

Having spoken of the typical forms of *Fusus*, it remains to notice that there are several species referred to this genus which touch closely upon *Pyrula* and *Murex*; these, as with all species on the confines of systematic groups, may be referred to either genus.

The spindle-shaped *Fusi* are principally from the Eastern World, and are either white or variegated with an uniform brown; in none of them is there any display of colour like that of *Fasciolaria* or *Turbinellus*. The ovate species are from a colder region aud mostly European, if not British.

Species 1. (Fig. *a* and *b*, Mus. Cuming.)

FUSUS MARMORATUS. *Fus. testâ fusiformi, vix abbreviatâ, spirâ subturritâ, anfractibus undique fortiter liratis et striatis, supernè peculiariter declivibus, medio angulato-tumidis, subcarinatis et plicato-nodosis; aperturæ fauce creberrimè acutè liratâ; albâ, rufo-fusco profusè pictâ et variegatâ.*

THE MARBLED FUSUS. Shell fusiform, slightly abbreviated, spire somewhat turreted, whorls strongly ridged and striated throughout, peculiarly slanting round the upper part, angularly swollen in the middle, slightly keeled and plicately nodose; interior of the aperture very closely sharply ridged; white, profusely painted and variegated with red-brown.

PHILIPPI, Abbild. and Besch. Conch. Fusus, Pl. 3. f. 7.

Hab. Australia; Jukes.

The whorls of this species are peculiarly angularly tumid in the middle, and the shell is very profusely stained throughout with dark red-brown.

Fig. 2. (Mus. Taylor.).

Another state of the *F. marmoratus* which appears at first sight to have all the characteristics of a distinct species, and should be therefore figured.

For Species 2. see Pl. IV.

Species 3. (Mus. Cuming.)

FUSUS LONGISSIMUS. *Fus. testâ elongato-fusiformi, spirâ acuminato-turritâ, anfractibus undique spiraliter sulcatis et acutè liratis, supernè declivibus, medio nodosis; intus extusque niveâ.*

THE VERY LONG FUSUS. Shell elongately fusiform, spire acuminately turreted, whorls spirally grooved and sharply ridged throughout, slanting round the upper part, nodose in the middle; snowy-white within and without.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. ix. p. 443.
Murex longissimus and *candidus*, Gmelin.

Hab. Ceylon.

This is the largest of the spindle-shaped species and may be known in all stages by its straight elongated growth; it has never any indication of colour, being pure white within and without.

Species 3. (Mus. Hanley.)

FUSUS OCELLIFERUS. *Fus. testâ subabbreviato-fusiformi, tenuiculâ, ventricosâ, spiræ suturis profundis, anfractibus supernè concavo-declivibus, undique spiraliter sulcatis et striatis, liris intermediis latiusculis, verrucosis; albidâ, aurantio-fusco pallidè tinctâ et variegatâ, lirarum verrucis conspicuè aurantio-fuscis.*

THE EYED FUSUS. Shell somewhat fusiform, rather thin, ventricose, sutures of the spire deep, whorls concavely slanting round the upper part, spirally grooved and striated throughout, intermediate ridges rather broad, warty; whitish, palely stained and variegated with orange-brown, warts of the ridges conspicuously orange-brown.

BORY, Encyclopédie Méthodique, pl. 429. f. 7.
Fusus verruculatus, Lamarck.

Hab. —— ?

Presuming M. Bory to be the author responsible for the names attached to the figures of shells in the Encyclopédie Méthodique, I adopt the above as being anterior to that of Lamarck. The *Fusus ocelliferus* is a very distinct species but not one of common occurrence; it is of rather light swollen growth, encircled throughout by broad obtuse rather distant ridges of which the two central ones are marked with tumid nodules or warts most conspicuously developed on the middle whorls.

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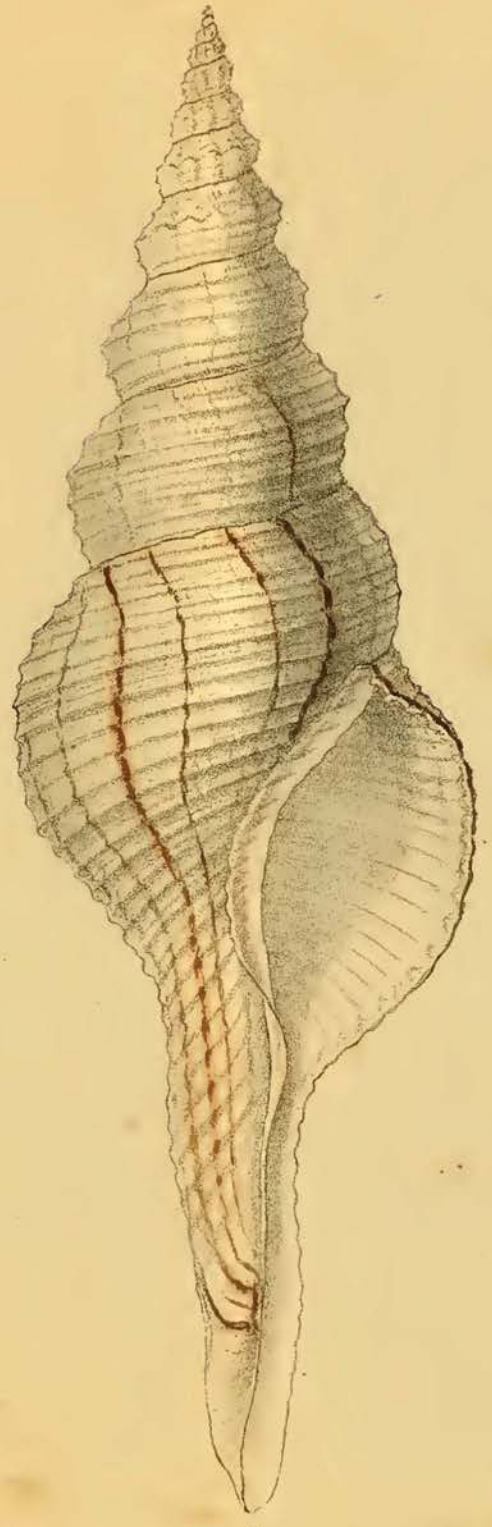

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Sowerby del. et lith.

Reeve imp.

FUSUS.

PLATE II.

Species 5. (Mus. Cuming.)

FUSUS LIGNARIUS. *Fus. testâ ovato-fusiformi, canali breviusculo et recurvo, anfractibus lævibus, obscurè planiliratis, ad apicem leviter nodosis, concavo-depressis; cinereâ aut cærulescente, fusco variè pictâ, aperturæ fauce intensè purpureo-fuscâ.*

THE WOODEN FUSUS. Shell ovately fusiform, canal rather short and recurved, whorls smooth, obscurely flatly ridged, slightly nodose at the apex, concavely depressed round the upper part; ash or blueish, variously painted with brown, interior of the aperture rich purple-brown.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. ix. p. 455. *Murex lignarius*, Linnæus.

Hab. Mediterranean.

A shell of rather solid growth in which the brown painting is inclined to be disposed in streaks from the sutures.

Species 6. (Mus. Taylor.)

FUSUS ALTERNATUS. *Fus. testâ ovato-fusiformi, canali subrecurvo, anfractibus rotundatis, supernè peculiariter plicatis, transversim undique conspicuè liratis, liris distantibus, alteris minutis filosis intervenientibus; griseo-albicante, liris vividè purpureo-nigris.*

THE INTERLACED FUSUS. Shell ovately fusiform, canal slightly recurved, whorls rounded, peculiarly plicated round the upper part, transversely conspicuously ridged, ridges distant, with others minute and thread-like intervening; greyish-white, ridges deep purple-black.

PHILIPPI, Abbild. und Besch. Conch. Fusus, Pl. 4. f. 6.

Hab. Bay of Mexillones.

The sculpture of this species is very similar in detail to that of the *F. Zelandicus*, still, out of many specimens I find no closer approximation in form than that exhibited by the accompanying figures.

Species 7. (Mus. Cuming.)

FUSUS TUBEROSUS. *Fus. testâ fusiformi, spirâ turritâ, canali breviusculo, leviter contorto, anfractibus undique spiraliter irregulariter liratis et striatis, supernè concavo-declivibus, medio fortiter nodosis et bicarinatis; aperturæ fauce acutè liratâ; albâ, castaneo-fusco profusè tinctâ.*

THE TUBEROUS FUSUS. Shell fusiform, spire turreted, canal rather short, slightly twisted; whorls spirally irregularly ridged and striated throughout, concavely slanting round the upper part, strongly nodose and two-keeled; interior of the aperture sharply ridged; white, profusely stained with chesnut-brown.

Hab. ——?

A new and very characteristic species amply distinguished from any hitherto described both in form and sculpture.

Species 8. (Mus. Cuming.)

FUSUS MANDARINUS. *Fus. testâ ovato-fusiformi, subventricosâ, anfractibus rotundatis, apicem versus plicato-costatis, liris conspicuis undique funiculatis, liris minutis filosis intervenientibus; albidâ, vel pallidè ferrugineâ, liris purpureo-nigris.*

THE MANDARIN FUSUS. Shell ovately fusiform, somewhat ventricose, whorls rounded, plicately ribbed towards the apex, corded throughout with conspicuous ridges, with minute thread-like ones intervening; white, or pale rust-colour, ridges purple-black.

DUCLOS, Mag. de Zool. 1838. pl. 8.
Fusus Zelandicus, Quoy.

Hab. New Zealand; Earl.

I publish this species as the *F. Mandarinus* of Duclos, on the authority of MM. Deshayes and Kiener; the shell does not very well accord with the figure in the Magasin de Zoologie, nor is it from the same locality.

Species 9. (Mus. Cuming.)

FUSUS DUPETIT-THOUARSII. *Fus. testâ elongato-fusiformi, canali leviter contorto, anfractibus rotundatis, apicem versus longitudinaliter plicato-costatis, transversim undique acutè liratis; candidâ, labro aurantio-fusco tincto.*

DUPETIT-THOUARS' FUSUS. Shell elongately fusiform, canal slightly twisted, whorls rounded, longitudinally plicately ribbed towards the apex, transversely sharply ridged throughout; pure white, lip edged with orange-brown.

KIENER, Icon. coq. viv. p. 5. pl. 11.

Hab. Gallapagos Islands; Cuming.

A fine species with little or no indication of colour.

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10 a.

10 b.

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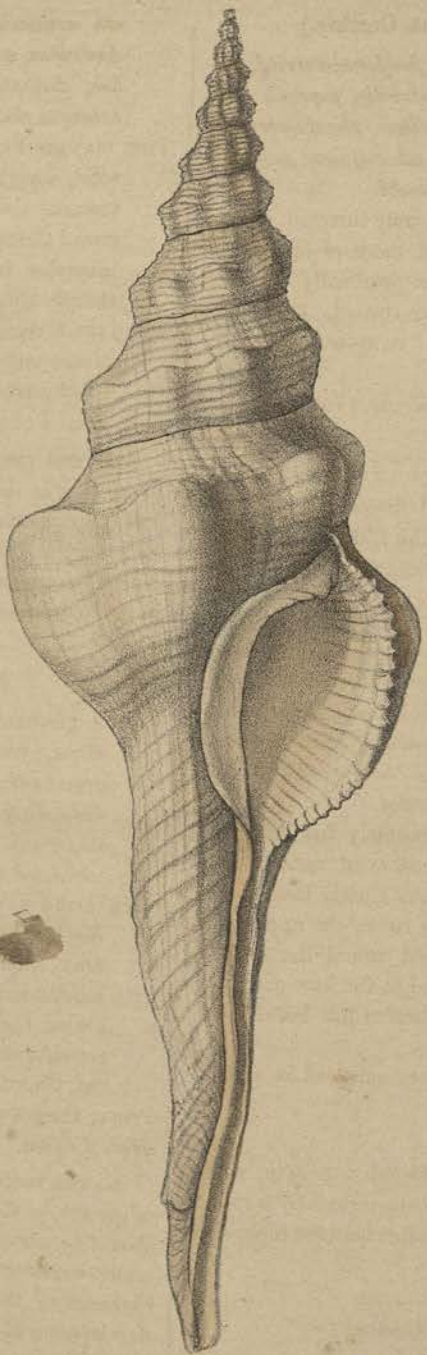

12.

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10 c.

10 d.

Sowerby, del. et lith.

Reeve

FUSUS.

PLATE III.

Species 10. (Fig. *a* to *d*, Mus. Cuming.)

FUSUS SYRACUSANUS. *Fus. testâ fusiformi-turritâ, anfractibus transversim liratis et striatis, supernè plus minusve angulatis, longitudinaliter plicato-costatis, nunc latiusculis, nunc angustis, ad angulum nodosis; ferrugineo-rufâ, plerumque albizonatâ.*

THE SYRACUSE FUSUS. Shell fusiformly turreted, whorls transversely ridged and striated, more or less angulated round the upper part, longitudinally plicately ribbed, ribs sometimes rather broad, sometimes narrow, nodose at the angle; rusty-red, generally zoned with white.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. ix. p. 456.
Murex Syracusanus, Linnæus.

Hab. Mediterranean.

A common inhabitant of the Mediterranean, varying considerably in the development of the ribs.

Species 11. (Mus. Taylor.)

FUSUS COLUS. *Fus. testâ elongato-fusiformi, gracillimâ, spirâ lanceolato-acuminatâ, canali subcontorto, anfractibus undique acutè et creberrimè tenuiliratis, supernè angulato-declivibus, medio carinatis et compresso-nodosis; albâ, riffo-castaneo ad apicem basinque tinctâ, lineâ rufo-castaneâ interruptâ inter nodos.*

THE DISTAFF FUSUS. Shell elongately fusiform, very slender, spire lanceolately acuminated, canal slightly twisted, whorls sharply and very closely finely ridged throughout, angularly slanting round the upper part, keeled and compressly noduled round the middle; white, stained with chesnut-red at the base and apex, with an interrupted reddish chesnut line between the nodules.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. ix. p. 443.
Murex colus, Linnæus.

Hab. Ceylon.

Distinguished by its slender elongated growth, whilst the periphery of the whorls are characterized by a row of nodules with an interrupted brown line between each, after the manner of the *F. tuberculatus*.

Species 12. (Mus. Cuming.)

FUSUS UNDATUS. *Fus. testâ elongato-fusiformi, crassâ, solidâ, undique superficialiter sulcatis, liris apicem versus acutioribus spirâ acuminatâ, anfractibus supernè declivibus, medio fortiter tuberculatis, tuberculis grandibus, distantibus; aperturæ fauce acutè liratâ; intus extusque eburneâ.*

THE WAVED FUSUS. Shell elongately fusiform, thick, solid, superficially grooved throughout, ridges sharper towards the apex, spire acuminated, whorls slanting round the upper part, strongly tubercled in the middle, tubercles large, distant; interior of the aperture sharply ridged; ivory-white within and without.

DESHAYES, Anim. sans vert. vol. ix. p. 446. *note.*
Murex undatus, Gmelin.
Fusus incrassatus, Lamarck.

Hab. Island of Taheite; Cuming.

This and the *F. longissimus* are extremely well figured by Martini in the same plate (Conch. Cab. vol. iv. pl. 145.) and the diagnose of each commences "*Fusus longissimus*" &c.; they are, however, described as separate species, the term "*longissimus*" not being intended as a specific title in the sense adopted by the present form of nomenclature.

Species 13. (Mus. Cuming.)

FUSUS LONGICAUDA. *Fus. testâ tenuiculâ, elongato-fusiformi, gracillimâ, canali subcontorto, spirâ subtiliter acuminatâ, anfractibus rotundatis, apicem versus longitudinaliter sulcatis, liris regularibus acutis, alternatim majoribus, undique spiraliter carinatis; intus extusque niveâ, ad apicem basinque pallidè castaneo tinctâ.*

THE LONG-TAIL FUSUS. Shell rather thin, elongately fusiform, very slender, canal somewhat twisted, spire finely acuminated, sutures excavated, whorls rounded, longitudinally grooved towards the apex, spirally keeled throughout with sharp regular ridges which are alternately larger; snowy white within and without, tinged with chesnut-brown at the base and apex.

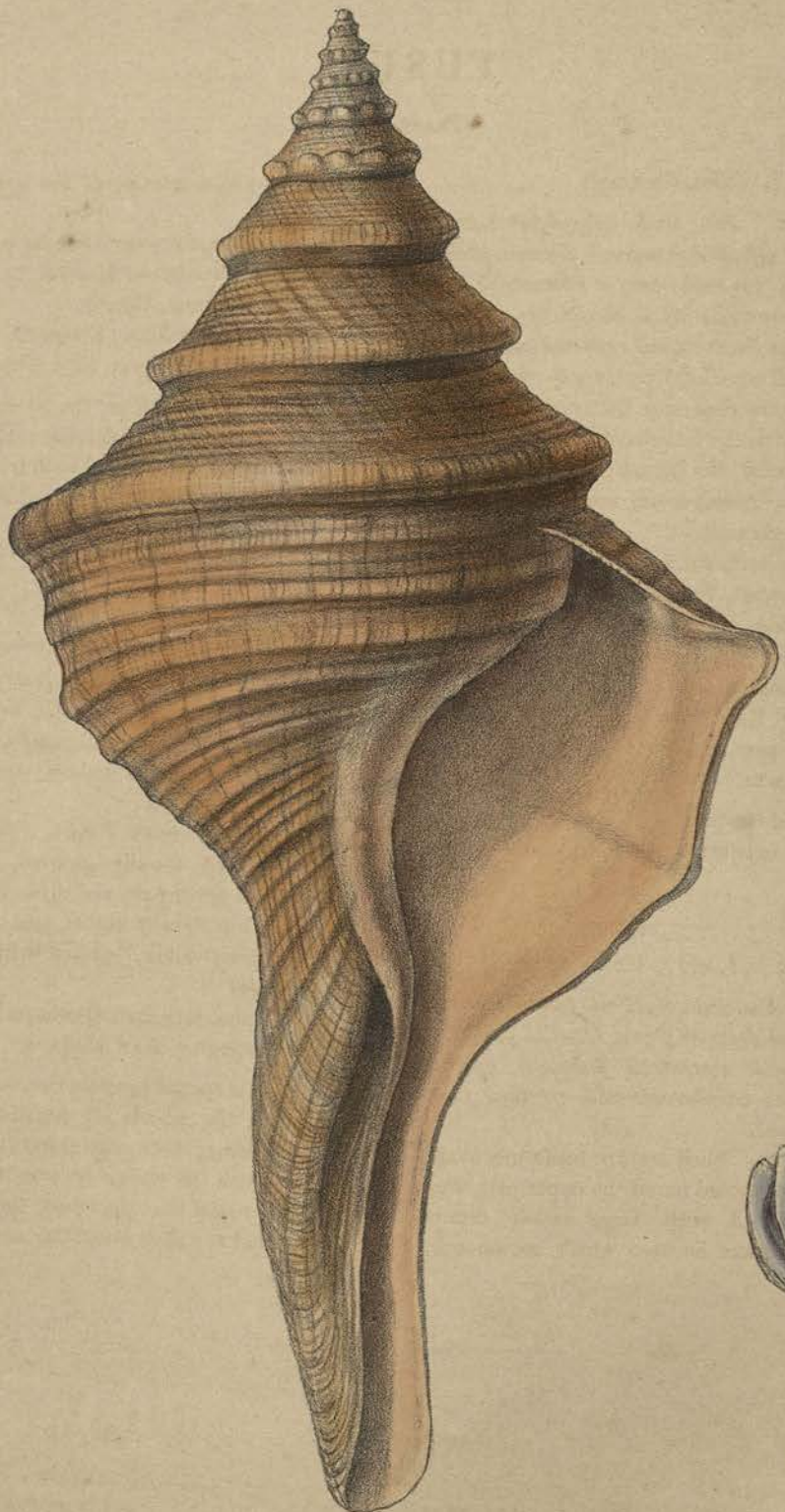
BORY, Encyclopédie Méthodique, pl. 423. f. 2.

Hab. Ceylon.

No two individuals exhibiting such a positive distinction of growth, as that presented by the *F. colus* and *longicauda* should be admitted under one specific head. The species under consideration may be recognized by the excavated character of the sutures, the sharper and less crowded development of the ridges, the slightest possible indication of nodules round the periphery of the whorls, and by the absence of any intermediate colouring.

2

14 a.



15.

14 b.

14 c.

Sowerby, del.et lith

Reeve, imp.

FUSUS.

PLATE IV.

Species 2. (Mus. Cuming.)

FUSUS GEVERSIANUS. *Fus. testâ subpyriformi-ovatâ, spirâ breviusculâ, anfractibus supernè depresso-planis, lamellis conspicuis confertis erectis concentricè fimbriatis, quarum interstitiis nitidè clathratis; cærulescente-albâ, aperturæ fauce intensè rufo-castaneâ.*

GEVERS' FUSUS. Shell somewhat pyriformly ovate, spire rather short, whorls depressly flattened round the upper part, concentrically fimbriated with conspicuous erect close-set lamellæ, the interstices between which are neatly latticed; blueish-white, interior of the aperture deep reddish-chesnut.

DESHAYES, Anim. sans vert. vol. ix. p. 590. *note.*
Buccinum Geversianum, Pallas.
Buccinum fimbriatum, Martyn.
Murex Magellanicus, Gmelin.
Murex foliatus, Schumacher.
Murex Peruvianus, Enc. Méth.
Murex lamellosus, pars, Dillwyn.

Hab. Strait of Magalhaens.

Chiefly distinguished from the following species by having the interstices between the laminæ more or less distinctly latticed.

Species 14. (Fig. *a*, *b*, and *c*, Mus. Cuming.)

FUSUS LACINIATUS. *Fus. testâ ovatâ vel fusiformi-ovatâ, anfractibus supernè depresso-planis, lamellis grandibus subdistantibus erectis concentricè fimbriatis, quarum interstitiis lævibus; cærulescente-albâ, aperturæ fauce intensè rufo-castaneâ.*

THE LACINIATED FUSUS. Shell ovate or fusiformly ovate, whorls depressly flattened round the upper part, concentrically fimbriated with large rather distant lamellæ, the interstices between which are smooth; blueish-white, interior of the aperture deep reddish chesnut.

DESHAYES, Anim. sans vert. vol. ix. p. 591. *note.*
Buccinum laciniatum, Martyn.
Murex lamellosus, Gmelin.
Murex foliaceus minor, Chemnitz.

Hab. Chonos Archipelago; Capt. Graves, R.N.

Easily distinguished from the preceding species by the more distant and stronger development of the laminæ, and by the absence of any latticed sculpture in the interstices. Both are characterized by a rich reddish-chesnut deposite of colouring in the interior.

Species 15. (Mus. Brit.)

(Figure considerably reduced).

FUSUS PROBOSCIDIFERUS. *Fus. testâ peramplâ, fusiformi, anfractibus spiraliter sulcatis, supernè concavo-declivibus, medio ventricosis, angulatis, conspicuè carinatis, carinâ apicem versus nodatis; spadiceo-fulvâ, epidermide sericeâ indutâ.*

THE PROBOSCIDIFEROUS FUSUS. Shell very large, fusiform, whorls spirally grooved, concavely slanting round the upper part, ventricose in the middle, angulated, conspicuously keeled, keel nodose towards the apex; fawn-yellow, covered with a beautiful silky epidermis.

LAMARCK, Anim. sans vert. (Deshayes' edit.) v. ix. p. 449.

Hab. Port Essington, New Holland.

This gigantic species presents two very distinct varieties, one in which the whorls are rounded, the central keel scarcly nodulous, and the general growth more contracted; another in which the whorls become more sharply angled and concave round the upper part, the keel being rather prominent, and the shell altogether more elongated.

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20.

Sowerby del. et lith.

Reeve, imp.

FUSUS.

PLATE V.

Species 16. (Mus. Taylor.)

FUSUS CINNAMOMEUS. *Fus. testâ fusiformi, tenuiculâ, anfractibus subventricosis rotundatis, liris alternatim latiusculis, obsoletè verrucosis, cingulatis; cinnamomeo-fuscâ.*

THE CINNAMON FUSUS. Shell fusiform, rather thin, whorls rather ventricose, rounded, encircled with obsoletely warty ridges, alternately wider; cinnamon-brown.

Hab. —— ?

Allied to the *Fusus ocelliferus* from which it is distinguished by the light rounded growth of the whorls and less acuminated spire. The colour of this specimen is peculiar, an uniform cinnamon-brown, though it cannot be estimated of value as a specific character.

Species 17. (Mus. Hanley.)

FUSUS AUREUS. *Fus. testâ fusiformi, spiræ suturis subexcavatis, anfractibus undique spiraliter sulcatis et striatis, supernè rotundatis, longitudinaliter plicato-nodosis, nodis aperturam versus evanidis; semipellucido-fuscâ, intus albâ.*

THE GOLDEN FUSUS. Shell fusiform, sutures of the spire somewhat excavated, whorls spirally grooved and striated throughout, rounded at the upper part, longitudinally plicately noduled, nodules fading towards the aperture; semitransparent-brown, interior white.

Hab. —— ?

The ridges formed by the spiral grooves of this shell seem rather disposed to range in pairs.

Species 18. (Mus. Cuming.)

FUSUS BUXEUS. *Fus. testâ subobeso-fusiformi, crassâ, subponderosâ, spiræ suturis rudis, anfractibus rotundatis, spiraliter sulcatis et inciso-striatis, longitudinaliter subplicatis; spadiceo-fuscescente, intus albâ.*

THE BOX-WOOD FUSUS. Shell somewhat stoutly fusiform, thick, rather ponderous, sutures of the spire rude, whorls rounded, spirally grooved and deeply striated, longitudinally faintly plicated; light fawn-brown, interior white.

Hab. —— ?

A shell of peculiarly solid growth, of which the sculpture, refined with neatness in the first few whorls, becomes gradually more and more obsolete towards the aperture. I have not seen any other specimen.

Species 19. (Mus. Brit.)

FUSUS COLOSSEUS. *Fus. testâ perampla, elongato-pyriformi, anfractibus undique spiraliter sulcatis et striatis, supernè angulatis, ad angulum nodosis, nodis submucronatis, longitudinaliter subobscurè plicatis; aperturâ elongatâ, canali latiusculo, patulo; pallidè spadiceo-fulvâ.*

THE COLOSSAL FUSUS. Shell very large, elongately pyriform, whorls spirally grooved and striated throughout, angulated round the upper part, nodose at the angle, nodules somewhat pointed, longitudinally rather obscurely plicated; aperture elongated, rather wide and open; pale fawn-yellow.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. ix. p. 442.

Hab. Eastern Seas.

This well-known species is very similar to the *Pyrula tuber*; indeed it is scarcely to be distinguished from that shell except by the more elongated fusiform growth which affects its generic arrangement.

Species 20. (Mus. Taylor.)

FUSUS CREBRILIRATUS. *Fus. testâ fusiformi, spiræ suturis rudis, anfractibus undique spiraliter acutè crebriliratis, rotundatis aut vix angulatis, medio subobsoletè plicato-nodatis; ustulato-fuscâ, longitudinaliter indistinctè flammulatâ, intus albidâ.*

THE CLOSELY-RIDGED FUSUS. Shell fusiform, sutures of the spire rude, whorls spirally sharply closely ridged throughout, rounded or scarcely angulated, somewhat obsoletely plicately noduled; burnt-brown, longitudinally indistinctly flamed, interior white.

Hab. Australia.

Though not of very original aspect, I have no hesitation in pronouncing this to be a new species, having seen two or three specimens in each of which the peculiarities noted above are very characteristic.

November, 1847.

21 a.

21 b.

22.

24.

23.

25 a.

25 b.

FUSUS.

PLATE VI.

Species 21. (Mus. Cuming.)

FUSUS AFER. *Fus. testâ abbreviato-fusiformi, medio gibbosâ, subpyriformi, anfractibus liris parvis muricatis undique cingulatis, supernè concavo-declivibus, medio plicato-nodosis; albidâ, aurantio-fusco longitudinaliter strigatâ.*

THE AFRICAN FUSUS. Shell shortly fusiform, gibbous in the middle, somewhat pear-shaped, whorls concavely slanting round the upper part, plicately noduled round the middle; whitish, longitudinally streaked with orange-brown.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. ix. p. 458. *Murex Afer*, Gmelin.

Hab. Senegal.

Rather an aberrant form of the genus verging on *Pyrula*, first described by Adanson in his 'Voyage en Senegal', under the name *Le Ligui*.

Species 22. (Mus. Cuming.)

FUSUS MULTICARINATUS. *Fus. testâ fusiformi, solidiusculâ, anfractibus transversim undique liratis et striatis, longitudinaliter plicato-costatis, costis latis confertis; intus extusque niveâ, labro interdum ferrugineo tincto.*

THE MANY-KEELED FUSUS. Shell fusiform, rather solid, whorls transversely ridged and striated throughout, longitudinally plicately ribbed, ribs broad, close-set; snow-white within and without, lip sometimes tinged with rust-brown.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. ix. p. 446.

Hab. ——?

Very like the *F. turricula* in general aspect, but easily distinguished from that species on comparison.

Species 23. (Mus. Cuming.)

FUSUS TURRICULA. *Fus. testâ elongato-fusiformi, rectâ, anfractibus transversim undique acutè liratis, longitudinaliter costatis, costis subdistantibus; intus extusque albâ.*

THE LITTLE-TURRET FUSUS. Shell elongately fusiform, straight, whorls transversely sharply ridged throughout, longitudinally ribbed, ribs rather distant; white within and without.

KIENER, Icon. coq. viv. p. 6. pl. 5. f. 1.

Hab. China.

A species of comparatively common occurrence, named *F. forceps* by M. Deshayes after Mr. Perry, whose 'Conchology' is not acknowledged by English writers.

Species 24. (Mus. Taylor.)

FUSUS TORULOSUS. *Fus. testâ obeso-fusiformi, ventricosâ, anfractibus rotundatis, liris obtusis subdistantibus cingulatis, medio carinatis et plicato-nodatis; castaneo-fuscâ, nodis albidis, carinâ inter nodos saturatiorè castaneâ.*

THE CORDED FUSUS. Shell stoutly fusiform, ventricose, whorls rounded, encircled with obtuse rather distant ridges, keeled and plicately noduled in the middle; chesnut-brown, nodules whitish, keel between the nodules darker chesnut-brown.

LAMARCK, Anim. sans vert. (Deshayes' edit.) v. ix. p. 446.

Hab. ——?

A fine large richly-coloured shell of bold and rather tumid growth.

Species 25. (Mus. Cuming.)

FUSUS BLOSVILLEI. *Fus. testâ oblongo-pyriformi, anfractibus transversim subtilissimè liratis et striatis, supernè declivibus, acutè angulatis, longitudinaliter costatis, costis ad angulum mucronatis, aperturæ fauce fortiter liratâ; livido-fuscâ aut cærulescente, lineis perpaucis nigricantibus interdum cingulatâ, aperturâ lutescente.*

BLOSVILLE'S FUSUS. Shell oblong-pyriform, whorls transversely very finely ridged and striated, slanting round the upper part and sharply angled, longitudinally ribbed, ribs sharp-pointed at the angle; livid brown or blueish, sometimes encircled with a very few blackish lines, aperture pale yellow.

DESHAYES, Enc. Méth., Vers, vol. ii. p. 155., and Mag. de Zool.

Fusus lividus, Philippi.

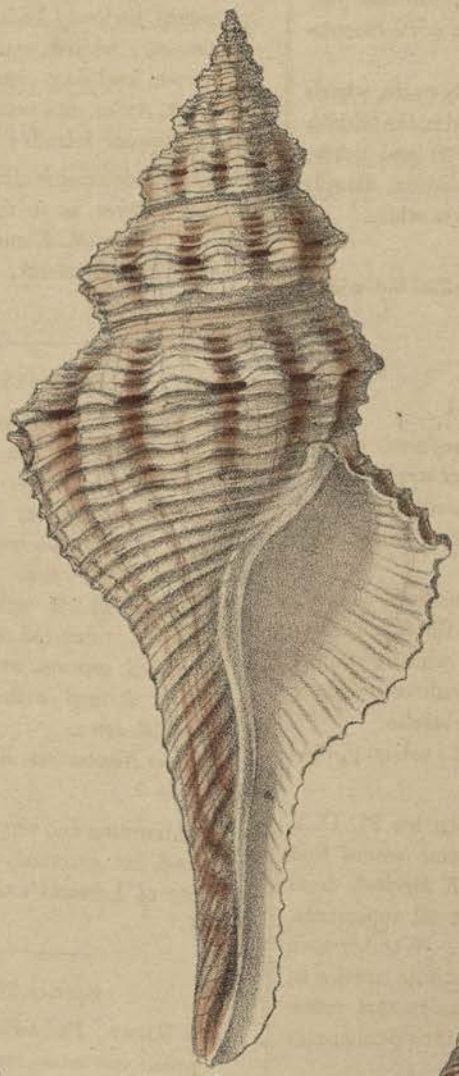
Hab. Bay of Manila (in rocky places at low water; Cuming.

An interesting species of an elongated pyriform shape, and pale yellow colour, more or less tinged externally with a livid brown or blue.

26 a.

26 b.

27.



28.

29.

30.

31.

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Sowerby, del. et lith.

Reeve, imp.

FUSUS.

PLATE VII.

Species 26. (Mus. Cuming.)

FUSUS HEPTAGONALIS *Fus. testâ fusiformi-ovatâ, anfractibus supernè declivibus, medio angulatis, supra subtiliter striatis, infra subdistanter liratis, longitudinaliter fortiter costatis, costis remotis, ad angulum acutè tuberculatis; fuscâ, apertura albidâ.*

THE SEVEN-SIDED FUSUS. Shell fusiformly ovate, whorls slanting round the upper part, angulated in the middle, finely striated above, rather distantly ridged below, longitudinally strongly ribbed, ribs distant, sharply tubercled at the angle; brown, aperture white.

Hab. —— ?

Allied somewhat in form to the *F. Blosvillei* but widely distinct from it in specific character.

Species 27. (Mus. Cuming.)

FUSUS TOREUMA. *Fus. testâ elongato-fusiformi, gracili, anfractibus undique spiraliter sulcatis et striatis, medio angulatis, et tuberculatis; albidâ, castaneo-fusco tinctâ et strigatâ, maculis conspicuis intensè castaneis inter tuberculos.*

THE EMBOSSED FUSUS. Shell elongately fusiform, slender, whorls spirally grooved and striated throughout, angulated and tubercled in the middle; whitish, stained and streaked with chesnut-brown, with conspicuous dark chesnut blotches between the tubercles.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. ix. p. 444.

Hab. Ceylon.

This and the *F. tuberculatus* (for which see Pl. IX.), differ from each other to about the same extent that *F. colus* differs from *F. longicauda*, and *F. turricula* from *F. multicarinatus*, so slightly as to be, to all appearance, merely the result of difference of locality. Whether such variations as these are sufficient to constitute species is, perhaps, a matter of opinion; their claim to that consideration is founded in these instances on their permanence and uniformity.

Species 28. (Mus. Cuming.)

FUSUS DISTANS. *Fus. testâ fusiformi, anfractibus ventricosis, liris distantibus subundatis undique cingulatis, medio nodoso-carinatis, nodis compressis; albidâ, castaneo-fusco hic illic tinctâ, carinâ intensè castaneâ inter nodos.*

THE DISTANT FUSUS. Shell fusiform, whorls ventricose, encircled throughout with distant slightly waved ridges, nodosely keeled in the middle, nodules compressed; whitish, stained here and there with chesnut brown, keel deep chesnut between the nodules.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. ix. p. 445.

Hab. Philippine Islands; Cuming.

Unable to determine satisfactorily the question submitted by M. Deshayes as to this being the *Murex ansatus* of Gmelin, I follow M. Kiener as the ostensible authority for the species of Lamarck, in calling it the *F. distans* of that author.

Species 29. (Mus. Taylor.)

FUSUS OBLITUS. *Fus. testâ elongato-fusiformi, gracillimâ, anfractibus margine juxta suturas corrugatis, medio tuberculatis, undique spiraliter sulcatis, sulcis irregulariter distantibus; albidâ, rufo-spadiceo peculiariter tinctâ, sulcis rufo-spadiceis.*

THE SMEARED FUSUS. Shell elongately fusiform, very slender, whorls wrinkled at the margin next the sutures, tubercled throughout the middle, spirally grooved, grooves irregularly distant; whitish, peculiarly stained with reddish fawn colour, grooves reddish-fawn.

Fusus Nicobaricus, Kiener (not of Lamarck).

Hab. —— ?

An interesting and very characteristic species not hitherto described, but extremely well figured by M. Kiener as an example of Lamarck's *Fusus Nicobaricus*, for which see Pl. IX.

Species 30. (Mus. Cuming.)

FUSUS NIFAT. *Fus. testâ ovato-turritâ, solidiusculâ, politâ, canali brevissimo, recurvo, anfractibus supernè depresso-planis, interdum autem raro convexis; albidâ, maculis nigricante-fuscis oblongo-quadratis seriatim pictâ, epidermide tenui lutescente indutâ.*

THE SPECKLED FUSUS. Shell ovately turreted, rather solid, polished, canal very short and recurved; whorls depressly flattened round the upper part, sometimes,

but rarely, convex; whitish, painted with rows of oblong-square spots, covered with a thin yellowish epidermis.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. ix. p. 449.

Buccinum pusio, Born.

Buccinum Nifat, Bruguiére.

Le Nifat, Adanson.

Hab. Senegal.

A well-known species, partaking very much of the character of *Buccinum*.

Species 31. (Mus. Cuming.)

FUSUS LINEATUS *Fus. testâ oblongo-ovatâ, canali brevissimo, subrecurvo; anfractibus convexis, lævigatis; albidâ, lineis castaneis equidistantibus regulariter cingulatâ.*

THE LINEATED FUSUS. Shell oblong-ovate, canal very short, little recurved; whorls convex, smooth; whitish, regularly encircled with equi-distant chesnut lines.

QUOY, Voy. de l'Astrolabe, vol. p. 501. pl. 34. f. 6 to 8.

Buccinum linea, Martyn.

Murex lineatus, Chemnitz.

Hab. New Zealand; Earl.

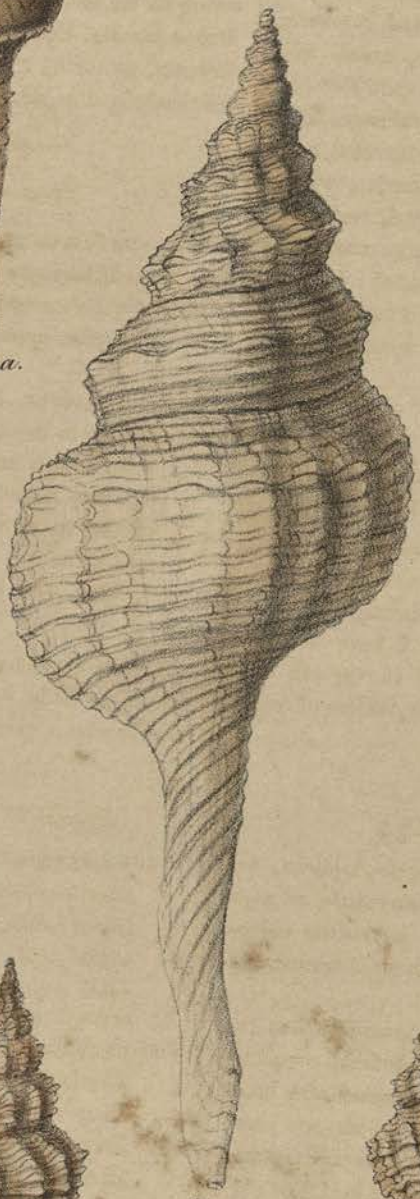
The specific title of this species may be more correctly rendered *lineatus*, without altogether depriving Martyn of the priority of the name.

32 a.

32 b.

33 a.

33 b.



34 a.

35 a.

35 b.

Sowerby, del. et lith.

Reeve, imp.

FUSUS.

PLATE VIII.

Species 32. (Mus. Belcher.)

FUSUS PAGODA. *Fus. testâ fusiformi, spirâ turritâ, apice papillari, canali valdè elongato, gracillimo, anfractibus supernè depresso-angulatis, squamis grandibus erectis tenuibus planatis ad angulum elegantissimè coronatis, anfractu ultimo infernè serrato-carinato, canali liris parvis serratis aut brevispinosis undique spiraliter cingulato; aperturâ parvâ, intus extusque fulvo-spadiceâ.*

THE PAGODA FUSUS. Shell fusiform, spire turreted, apex papillary, canal very elongated and slender, whorls depressly angulated round the upper part, very elongately coronated at the angle with large erect thin flattened scales, last whorl serrately keeled round the lower part, canal spirally encircled throughout with small serrated or short-spined ridges; aperture small; fulvous-bay within and without.

LESSON, Illustrations de Zoologie, pl. 40.

Hab. Near the shores of Kiusu, Straits of Korea (obtained by the dredge in about fourteen fathoms from a hard muddy or stony bottom); Belcher, Adams.

The specimen here figured of this very remarkable shell, collected by Capt. Sir Edward Belcher near the above-mentioned island of the Japanese Group, during the voyage of H.M.S. Samarang, is the only one I have seen; it does not exhibit the violet colouring of the mouth described by M. Lesson, but has the elegant diadem of scales very beautifully developed.

Species 33. (Mus. Hanley.)

FUSUS LATICOSTATUS, *Fus. testâ elongato-fusiformi, subobesâ, anfractibus supernè concavo-angulatis, ad angulum verrucosis, liris planis latis, interstitiis subprofundè sulcatis, cingulatis; albâ, aurantio-castaneo maculatâ et strigatâ.*

THE BROAD-RIBBED FUSUS. Shell elongately fusiform, rather stout, whorls concavely angulated round the upper part, warty at the angle, encircled with broad flat ridges, the interstices between which are somewhat deeply grooved; white, streaked and spotted with orange-chesnut.

DESHAYES, Magasin de Zool. 1831. pl. 31.

Hab. Ceylon.

Care must be taken not to confound this species with the *F. Nicobaricus*, from which it is constantly distinguished by its broader and stouter growth, flattened ridges and light transparent orange-chesnut painting.

M. Deshayes has adopted the title of *Fusus variegatus* for this species in his edition of the Anim. sans vert., owing to its having been so named under the head of *Murex* by Mr. Perry; the labours of that author are, however, unworthy of credit, and have long ceased to be acknowledged in this country.

Species 34. (Mus. Cuming.)

FUSUS VENTRICOSUS. *Fus. testâ elongato-fusiformi, medio tumidâ, utrinque gracili, attenuatâ; anfractibus rotundatis, undique spiraliter sulcatis, medio nodoso-carinatis et plicatis; aperturæ fauce acutè liratâ; intus extusque niveâ.*

THE VENTRICOSE FUSUS. Shell elongately fusiform, swollen in the middle, slender and attenuated at each end; whorls rounded, spirally grooved throughout, nodosely keeled and plicated in the middle; interior of the aperture sharply ridged; snowy white within and without.

BECK, MSS. Mus. King of Denmark.

Hab. ——?

A very characteristic and distinct species, named, in manuscript only, by Dr. Beck of Copenhagen, of which there is also a specimen in Mr. Taylor's collection.

Species 35. (Fig. *a* and *b*. Mus. Cuming.)

FUSUS CÆLATUS. *Fus. testâ subelongato-fusiformi, anfractibus longitudinaliter plicato-costatis, transversim subtiliter liratis, liris minutè squamuloso-serratis, interstitiis profundis, anfractuum medio liris alternatim valdè majoribus, costas super acutè productis; intus extusque albâ.*

THE CARVED FUSUS. Shell somewhat elongately fusiform, whorls longitudinally plicately ribbed, transversely finely ridged, ridges minutely squamulously serrated, interstices deep, middle of the whorls with the ridges alternately very much the larger, sharply produced across the ribs; white within and without.

Hab. ——?

The sculpture of this species exhibits all the ingenuity and delicacy of a piece of Chinese ivory carving.

---

36 a.

36 b.

37 a.

38

37 b.

36 c.

36 d.

Sowerby, del. et lith.

Reeve, imp.

FUSUS.

PLATE IX.

Species 36. (Fig. *a* and *b*, Mus. Taylor, Fig. *c* and *d*, Mus. Belcher.)

FUSUS POLYGONOIDES. *Fus. testâ subelongato-fusiformi, anfractibus liris conspicuis subrudis cingulatis, supernè angulatis, longitudinaliter plicato-tuberculatis, tuberculis ad angulum valde prominentibus; albidâ, rufo-fusco sparsim maculatâ et flammatâ.*

THE MANY-ANGLED FUSUS. Shell somewhat elongately fusiform, whorls encircled with conspicuous rather rude ridges, angulated round the upper part, longitudinally plicately tubercled, tubercles very prominent at the angle; whitish, sparingly blotched and flamed with red-brown.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. ix. p. 455.
Fusus biangulatus? Deshayes (fide Kiener).

Hab. Eastern Seas; Belcher.

The two examples of this species here figured are remarkable for their difference of growth, one being elongated and spindle-shaped, whilst the other, and more common variety, is short and contracted.

Species 37. (Mus. Cuming.)

FUSUS NICOBARICUS. *Fus. testâ elongato-fusiformi, anfractibus liris grandibus rotundatis, interstitiis subexcavatis undique cingulatis, supernè angulatis, ad angulum nodatis; albidâ, nigricante-castaneo profusè flammatâ.*

THE NICOBAR FUSUS. Shell elongately fusiform, whorls encircled throughout with large rounded ridges, the interstices between which are somewhat excavated, angulated round the upper part, noduled at the angle; whitish, profusely flamed with blackish-chesnut.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. ix. p. 445.
Murex Nicobaricus, Chemnitz.

Hab. ——?

This, and not the shell figured by Kiener, is the true *Murex Nicobaricus* of Chemnitz; it approaches nearest to Deshayes' *Fusus laticostatus* but is of more slender growth, whilst the transverse ridges are more elevated and rounded and the coloured flames darker.

Species 38. (Mus. Cuming.)

FUSUS TUBERCULATUS. *Fus. testâ elongato-fusiformi, ventricosâ, anfractibus spiraliter sulcatis, supernè angulato-declivibus, medio nodatis; albâ, maculis castaneo-fuscis inter nodis.*

THE TUBERCULATED FUSUS. Shell elongately fusiform, ventricose, whorls spirally grooved, angularly slanting round the upper part, noduled in the middle; white, with chesnut-brown blotches between the nodules.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. ix. p. 444.

Hab. Eastern Seas.

Mainly distinguished from its nearest ally the *F. toreuma* by its more ventricose growth and absence of colour, excepting in the interstices between the nodules.

December, 1847.

39.a.

39 b.

39 c.

40.

Sowerby, del. et lith.

Reev

FUSUS.

PLATE X.

Species 39. (Fig. *a* and *b*, Mus. Taylor. Fig. *c*, Mus. Cuming.)

FUSUS DESPECTUS. *Fus. testâ ovato-turritâ, subfusiformi, ventricosâ, basi abbreviatâ; anfractibus spiraliter striatis et carinatis, supernè angulato declivibus, interdum peculiariter plicatis, carinâ ad angulum subprominente, tuberculato-nodosâ, cæteris plus minusve obscuris; spadiceo-fuscâ.*

THE DESPISED FUSUS. Shell ovately turreted, somewhat fusiform, ventricose, shortened at the base; whorls spirally striated and keeled, angularly slanting round the upper part, sometimes peculiarly plicated, keel at the angle rather prominent, tubercularly nodose, the rest more or less obscure; fawn-brown.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. ix. p. 448.

Murex despectus, Linnæus.

Tritonium despectum, Muller.

Testa junior, *Murex carinatus*, Pennant.

Fusus carinatus, Lamarck.

Hab. Northern Seas, Spitzbergen, &c.

There is little doubt but the shells figured by Pennant in his British Zoology vol. iv. Pl. 77, and Frontispiece, under the name of *Murex carinatus* are different states of the Linnæan *Murex despectus*, in which the spire is unusually produced and keeled; and M. Kiener's illustration of Lamarck's *Fusus carinatus* is evidently the same species in an early stage of growth, similar to that represented in the accompanying plate at Fig. 39, *a*.

Species 40. (Mus. Cuming.)

FUSUS LYRATUS. *Fus. testâ ovatâ, ventricosâ, anfractibus supernè concavo-angulatis, costis rotundatis distantibus conspicuè spiraliter cingulatis, superioribus majoribus interstitiis lævibus, excavatis; albido-spadiceâ, costis pellucido-fuscescentibus.*

THE HARP-STRUNG FUSUS. Shell ovate, ventricose, whorls concavely angulated round the upper part, conspicuously spirally encircled with distant rounded ribs, of which the upper are the larger, and the interstices smooth and excavated; whitish fawn-colour, ribs light transparent-brown.

DESHAYES, Anim. sans vert. vol. ix. p. 478.

Buccinum lyratum, Martyn.

Murex lyratus, Gmelin.

Murex glomus cereus, Chemnitz.

Hab. King George's Sound, New Holland; Chemnitz.

I have never seen so large and perfect a specimen of this species as that represented by Chemnitz; it is one of extremely rare occurrence, and the example here figured from Mr. Cuming's collection is the most complete that I am aware of.

December, 1847.

42 a.

41.

42 b.

44.

43 a.

43 b.

Sowerby, del. et lith.

Reeve, imp.

FUSUS.

PLATE XI.

Species 41. (Mus. Cuming.)

FUSUS NODOSUS. *Fus. testâ fusiformi-ovatâ, subturritâ, anfractibus transversim spiraliter striatis, medio angulato-carinatis, ultimo bicarinatis, carinis acutè nodosis; lutescente-albidâ, ferrugineo-rufo plus minusve tinctâ.*

THE NODOSE FUSUS. Shell fusiformly ovate, somewhat turreted, whorls transversely spirally striated, angularly keeled round the middle, last whorl two-keeled, keels sharply noduled; yellowish-white, more or less stained with rust-red.

DESHAYES, Anim. sans vert. vol. ix. p. 454. *note.*
Buccinum nodosum, Martyn.
Murex raphanus, Chemnitz.
Fusus raphanus, Lamarck.

Hab. New Zealand.

A light ovate species, encircled with rows of sharp nodules.

Species 42. (Fig. *a* and *b*, Mus. Taylor.)

FUSUS STRIATUS. *Fus. testâ fusiformi-ovatâ, columellâ peculiariter contortâ, anfractibus rotundatis, lævibus, undique spiraliter striatis, sordidè albâ, epidermide tenui corneâ indutâ.*

THE STRIATED FUSUS. Shell fusiformly ovate, columella peculiarly twisted, whorls rounded, smooth, spirally striated throughout, dull white, covered with a thin horny epidermis.

Fusus Islandicus var., Kiener, Icon. Coq. viv. p. 37. pl. 15. f. 1. and 2.

Hab. ——?

Having examined the *Fusus Islandicus* (*F. corneus*, Linn.) in different stages of growth I am inclined to accord with the opinion expressed by M. Deshayes (Anim. sans vert. vol. ix. p. 450. *note*) that the species under consideration is distinct.

Species 43. (Mus. Cuming.)

FUSUS CORNEUS. *Fus. testâ fusiformi-turritâ, basi breviter contortâ, anfractibus convexis, undique spiraliter striatis; sordidè albâ, epidermide corneâ indutâ.*

THE STRIATED FUSUS. Shell fusiformly turreted, shortly twisted at the base, whorls convex, dull white, covered with a horny epidermis.

DESHAYES, Anim. sans vert. vol. ix. p. 450. *note.*
Murex corneus, Linnæus, Gmelin, Dillwyn.
Murex Islandicus, Gmelin.
Fusus Islandicus, Lamarck.

Hab. Northern Seas.

An extremely variable species, being often of a large and more distorted growth.

Species 44. (Mus. Cuming.)

FUSUS ANTIQUUS. *Fus. testâ ovato-fusiformi, basi abbreviatâ, anfractibus rotundatis, ventricosis, undique spiraliter elevato-striatis et obscurè carinatis; albâ, aperturæ fauce croceo-aurantiâ.*

THE ANCIENT FUSUS. Shell ovately fusiform, shortened at the base, whorls rounded and ventricose, spirally elevately striated and obscurely keeled throughout; white, interior of the aperture saffron-orange.

LAMARCK, Anim. sans vert. vol. ix. p. 447.
Murex antiquus, Linnæus.
Tritonium antiquum, Muller.

Hab. Northern Seas.

Obscurely keeled towards the apex, somewhat after the manner of the *F. despectus*.

December, 1847.

45 a.

45 b.

46.

47 a.

47 b.

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FUSUS.

PLATE XII.

Species 45. (Mus. Cuming.)

FUSUS DEFORMIS. *Fus. testâ ovatâ, tenuiculâ, ventricosâ, sinistrali, spirâ papillari, depressâ; anfractibus transversim subtilissimè striatis, supernè infra suturas obliquè tuberculato-tumidis, aperturâ peramplâ; rufescente-spadiceâ.*

THE DEFORMED FUSUS. Shell ovate, rather thin, ventricose, sinistral, spire papillary, depressed; whorls transversely very finely striated, obliquely tuberculately swollen beneath the sutures, aperture very large.

Hab. Spitzbergen.

I cannot refer this species to any hitherto described; the summits of the whorls are remarkable in being alternately tubercularly swollen and indented.

Species 46. (Mus. Cuming.)

FUSUS CONTRARIUS. *Fus. testâ ovato-fusiformi, sinistrali, anfractibus convexis, undique subconspicuè spiraliter striatis et sulcatis, sulcis alternatim majoribus; fulvescente, intus albidâ.*

THE LEFT-HANDED FUSUS. Shell ovately fusiform, sinistral, whorls convex, somewhat conspicuously grooved and striated throughout, grooves alternately larger; pale fulvous-brown, interior white.

LAMARCK, Anim. sans vert. (Deshayes' edit.) vol. ix. p. 462.

An eadem var.? *Fusus sinistrorsus*, Deshayes.

Hab. Malta.

Notwithstanding the severe reprimand which M. Deshayes has given M. Kiener on the subject of his *F. sinistrorsus*, I see no reason to believe that it is anything more than a variety of the *F. contrarius*.

Species 47. (Mus. Brit.)

FUSUS NORVEGICUS. *Fus. testâ ovato-fusiformi, crassiusculâ, spirâ brevi, apice papillari; anfractibus lævibus, glabratis, vix striatis, ultimo ventricoso, peramplo; aperturâ amplâ, labro incrassato; rosaceo-lactea.*

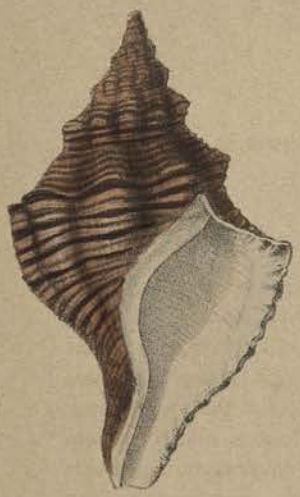
THE NORWEGIAN FUSUS. Shell ovately fusiform, rather thick, spire short, apex papillary; whorls smooth, polished, scarcely striated, last whorl ventricose, very large; aperture large, lip thickened; pinkish cream-colour.

Strombus Norvegicus, Chemnitz, Conch. Cab. vol. x. p. 218. pl. 157. f. 1497–8.

Hab. Coast of Norway. Britain, coast of Yorkshire, Durham, and Northumberland.

For a more detailed account of this interesting and rare species, the reader may be referred to a paper "On some Shells found on the coast of Northumberland" by Mr. W. King, of Newcastle.

December, 1847.



49 a.

48 a.

48 b.

48 c.

49 c.

50 a.

50 b.

Sowerby, del. et lith.

Reeve, Pl

FUSUS.

PLATE. XIII.

Species 48. (Fig. *a*, Mus. Cuming. Fig. *b*, Mus. Taylor.)

FUSUS CRETACEUS. *Fus. testâ fusiformi-ovatâ, solidiusculâ, abbreviatâ et leviter contortâ, anfractibus rotundatis subventricosis, undique spiraliter sulcatis, labro intus seriatim noduloso; intus extusque peculiariter cretaceo-albâ.*

THE CHALK FUSUS. Shell fusiformly ovate, rather solid, abbreviated and slightly twisted at the base, whorls rounded, somewhat ventricose, spirally grooved throughout, lip distinguished in the interior by a row of nodules; peculiarly chalk-white within and without.

Hab. —— ?

This species appears to have been mistaken for a solidified state of the *F. Magellanicus* in which the latticed sculpture is obsolete; an examination of specimens in different stages of growth will, however, sufficiently show that it is distinct.

Species 49. (Fig. *a*, *b*, Mus. Taylor. Fig. *c*, Mus. Cuming.)

FUSUS DILATATUS. *Fus. testâ oblongo-fusiformi, anfractibus undique conspicuè sulcatis et tenuissimè striatis, supernè angulatis, ad angulum plicato-tuberculatis, tuberculis interdum subcompressis; fuscescente, liris intensè castaneis, intus albâ.*

THE DILATE FUSUS. Shell oblong-fusiform, whorls conspicuously grooved and finely striated throughout, angulated round the upper part, plicately tuberculated at the angle, tubercles sometimes slightly compressed; pale brown, ridges deep chesnut, interior white.

QUOY and GAIMARD, Voy. de l'Astrolabe, Zool. vol. ii. p. 498. pl. 34. f. 15 to 17.

Fusus adustus, Philippi.

Hab. New Zealand; Hooker.

A fine species of comparatively rare occurrence collected by M.M. Quoy and Gaimard at New Zealand; also by Dr. J. D. Hooker during the voyage of H.M.SS. Erebus and Terror to the Antarctic Regions. It is extremely variable in growth, the tubercles on the angle of the whorls being compressed in some specimens, whilst in others they are disposed in numerous folds; and I think it not improbable that the *Fusus Mandarinus* of Duclos may prove to be a state of the species in which the tuberculated angularity of the whorls is altogether wanting.

Species 50. (Mus. Taylor.)

FUSUS PYRULATUS. *Fus. testâ elongato-pyriformi, anfractibus rotundatis, subventricosis, costis tumidis longitudinalibus et transversis subdistantibus nitidè clathratis; lutescente, rufo-fuscescente hic illic pallidè tinctâ.*

THE PEAR-SHAPED FUSUS. Shell elongately pyriform, whorls rounded, somewhat ventricose, neatly latticed with longitudinal and transverse swollen ribs; yellowish, faintly stained here and there with reddish-brown.

Hab. Van Dieman's Land.

Of light growth, amply distinguished from any other species both in form and sculpture.

December, 1847.

51.

52 a.

52 b.

53.

54 a.

54 b.

55.

Sowerby, del. et lith.

Reeve, imp.

FUSUS.

PLATE. XIV.

Species 51. (Mus. Cuming.)

FUSUS VAGINATUS. *Fus. testâ fusiformi, anfractibus medio angulato-ventricosis, ad peripheriam muricato-squamosis, squamis longis erectis, in laminas tenues desinentibus; intus extusque albâ.*

THE SHEATHED FUSUS. Shell fusiform, whorls angularly ventricose in the middle, prickly squamose at the periphery, scales long erect, ending in thin laminæ; white within and without.

DESHAYES, Anim. sans vert. vol. ix. p. 464.
Murex vaginatus, Philippi.
Fusus echinatus, Kiener.
Hab. Mediterranean.

Distinguished by the elevated prickly scales which encircle the whorls, each terminating longitudinally in a fine lamina.

Species 52. (Mus. Cuming.)

FUSUS LANCEOLA. *Fus. testâ lanceolato-fusiformi, spirâ acuminatâ, anfractibus numerossimis, longitudinaliter costatis, costis subdistantibus, interstitiis excavatis, liris subtilibus angustis pulcherrimè clathratis, liris costas super subnodiferis; cinereo-spadiceâ, costarum interstitiis castaneo-fuscis.*

THE LITTLE-LANCE FUSUS. Shell lanceolately fusiform, spire acuminated, whorls very numerous, longitudinally ribbed, ribs somewhat distant, interstices excavated, beautifully latticed with fine narrow ridges, ridges somewhat nodose over the ribs; ashy-fawn colour, interstices between the ribs deep chesnut-brown.

REEVE, Conch. Syst. vol. ii. pl. 232. f. 2.
Lanceola, Martini.
Murex lancea and *angustus*, Gmelin.
Fusus aculeiformis, Sowerby.
Fusus ligula, Kiener.
Fusus lancea, Deshayes.
Hab. Island of Ticao, Philippines; Cuming.

This very elegant species was so accurately described and figured, for the first time, by Martini, that his specific name, though not agreeable to the present form of nomenclature, should have priority.

I retain this species in the genus *Fusus* to avoid any further confusion of names, but believe it belongs rather to *Turbinellus*; the columella being characterized by two minute winding plaits.

Species 53. (Fig. Kiener.)

FUSUS TESSELLATUS. *Fus. testâ ovato-fusiformi, transversim tenuissimè striatâ, flavicante, maculis fulvis subquadratis seriatim tessellatâ; anfractibus supernè longitudinaliter subplicatis; spiræ apice papillari, columellâ lævi.*

THE TESSELLATED FUSUS. Shell ovately fusiform, transversely very finely striated, yellowish, tessellated with rows of somewhat square fulvous spots; whorls slightly plicated longitudinally at the upper part; apex of the spire papillary, columella smooth.

SCHUBERT and WAGNER, Conch. Cab. Supp. pl. 219. f. 3048–9.
Hab. ——?

Not having seen this species, I insert a copy of M. Kiener's figure which he represents as being taken from a specimen in the collection of the Prince Massena now, I presume, that of the late Baron Delessert.

Species 54. (Mus. Belcher.)

FUSUS CLAUSICAUDATUS. *Fus. testâ elongato-fusiformi, crassiusculâ, spirâ apicem versus plicato-tuberculatis, anfractibus lineis spiraliter exaratis; aperturâ parvâ, callositate supernè munitâ, labro peculiariter incurvo, canali ferè clauso; olivaceo-fuscâ.*

THE CLOSED-TAIL FUSUS. Shell elongately fusiform, rather thick, spire plicately tubercled towards the apex, whorls spirally ploughed with lines; aperture small, furnished at the upper part with a callosity, lip peculiarly bent inwards, canal almost closed; olive-brown.

HINDS, Moll. Voy. Sulphur, p. 13. pl. 1. f. 10, and 11.
Hab. L' Agulhas Bank.

Distinguished from all other species by the peculiar incurved growth of the lip, which prevails throughout the canal.

Species 55. (Mus. Taylor.)

FUSUS ROSTRATUS. *Fus. testâ fusiformi, anfractibus rotundatis, longitudinaliter plicato-costatis, liris angustis acutis undique spiraliter funiculatis, liris costas super submuricatis; rufo-fulvescente.*

THE BEAKED FUSUS. Shell fusiform, whorls rounded, longitudinally plicately ribbed, spirally corded throughout with sharp narrow ridges, ridges slightly prickly on the ribs; reddish fulvous-colour.

DESHAYES, Enc. Méth. vers. vol. ii. p. 151.

Murex rostratus, Olivi.

Fusus strigosus, Lamarck.

Fusus aciculatus, Delle Chiaje.

Fusus provincialis, De Blainville.

Hab. Mediterranean.

A most delicate and beautifully sculptured species, not of frequent occurrence.

56.

57.

60.

58.

59.

Sowerby del. et lith.

FUSUS.

PLATE XV.

Species 56. (Mus. Cuming.)

FUSUS TURBINELLOIDES. *Fus. testâ oblongo-ovatâ, basi recurvâ, anfractibus spiraliter sulcatis et striatis, medio acutè angulatis et tuberculatis, tuberculis compressis, mucronatis; albâ, epidermide sericeâ lutescente indutâ.*

THE TURBINELLA-LIKE FUSUS. Shell oblong-ovate, recurved at the base, whorls spirally grooved and striated, sharply angled and tuberculated in the middle, tubercles compressed, sharp-pointed; white, covered with a yellowish silken epidermis.

Hab. Africa?

A delicate species of light growth, partaking of the typical form of *Turbinella*.

Species 57. (Mus. Metcalfe.)

FUSUS MYRISTICUS. *Fus. testâ subgloboso-ovatâ, anfractibus rotundatis, liris conspicuis longitudinalibus et transversis clathratis; luteo-rufescente.*

THE NUTMEG FUSUS. Shell somewhat globose, whorls rounded, latticed with conspicuous longitudinal and transverse ridges; yellowish-red.

Hab. ——?

The ridges are slightly nodulous where crossing each other.

Species 58. (Mus. Cuming.)

FUSUS RUFUS. *Fus. testâ oblongo-fusiformi, spirâ turritâ, anfractibus supernè declivibus, medio angulatis et plicato-nodosis, nodis prominulis, liris parvis decussatis; ustulato-rufâ, intus albâ.*

THE RED FUSUS. Shell oblong-fusiform, spire turreted, whorls slanting round the upper part, angulated and plicately noduled in the middle, nodules prominent, crossed with small ridges; burnt red colour, interior white.

Hab. Philippines; Cuming.

The ridges which may be supposed to encircle this species appear on the tubercles, but are obsolete in the interstices.

Species 59. (Mus. Hanley.)

FUSUS CANCELLARIOIDES. *Fus. testâ ovatâ, solidiusculâ, basi contortâ et recurvâ, spiræ suturis peculiariter impressis, anfractibus transversim fortiter liratis, longitudinaliter plicato-costatis, costis latiusculis, labrum versus gradatim evanidis; albidâ, liris rufo-fuscescentibus.*

THE CANCELLARIA-LIKE FUSUS. Shell ovate, solid, twisted and recurved at the base, sutures of the spire peculiarly impressed, whorls transversely strongly ridged, longitudinally plicately ribbed, ribs rather wide, gradually disappearing towards the lip; whitish, ridges reddish brown.

Hab. China?

A shell of rather anomalous structure, being very like a *Cancellaria* wanting the columella plaits, whilst it partakes of the character of *Buccinum*, though not unaptly referred to *Fusus*.

Species 60. (Mus. Metcalfe.)

FUSUS NOBILIS. *Fus. testâ giganteâ, elongato-fusiformi, anfractibus rotundatis, spiraliter creberrimè acutè liratis, longitudinaliter plicato-costatis, costis latiusculis, anfractûs ultimi et penultimi labrum versus gradatim evanidis; albâ, lirarum interstitiis pallidissimè rufescentibus.*

THE NOBLE FUSUS. Shell very large, elongately fusiform, whorls rounded, spirally very closely sharply ridged, longitudinally plicately ribbed, ribs rather broad, of the last and penultimate whorl gradually fading away towards the lip; white, interstices of the ridges very faintly tinged with reddish-brown.

Hab. ——?

Unlike the large species which precede this, the whorls exhibit no indication of any spiral row or keel of nodules. The accompanying figure is reduced, the specimen from which it is drawn being ten inches and a half in length and three inches and a half in width.

---

61 a.

62.

61. b.

63.

64.

Sowerby del. et lith

FUSUS.

PLATE XVI.

Species 61. (Fig. *a*, Mus. Belcher. Fig. *b*, Mus. Metcalfe.)

FUSUS OREGONENSIS. *Fus. testâ oblongo-ovatâ, tenui, ventricosâ, anfractibus rotundatis, longitudinaliter costatis, liris transversis angustis binis peculiariter clathratis; albâ, epidermide setosâ cristatâ indutâ.*

THE OREGON FUSUS. Shell oblong-ovate, thin, ventricose, whorls rounded, longitudinally ribbed, peculiarly latticed with narrow transverse ridges arranged two and two; white, covered with a tufted bristly epidermis.

Triton Oregonense, Say, Ann. Lyc. Nat. Hist. v. iv. p. 165. pl. 11. f. 2.

Hab. North America.

Distinguished from the following well-known species by the latticed sculpture being of a much larger and wider character, with the transverse ridges ranging in pairs.

Species 62. (Mus. Cuming.)

FUSUS CANCELLATUS. *Fus. testâ subfusiformi, ovatâ, tenui, ventricosâ, anfractibus costis parvis longitudinalibus et transversis undique cancellatis, costis labrum versus evanidis; columellâ callositate supernè munitâ; albâ, epidermide fibrosâ indutâ.*

THE CANCELLATED FUSUS. Shell somewhat fusiformly ovate, thin, ventricose, whorls cancellated throughout with small longitudinal and transverse ridges, ribs becoming fainter towards the lip; columella furnished at the upper part with a callosity; white, covered with a fibrous epidermis.

Triton cancellatum, Lamarck, Anim. sans vert. (Deshayes' edit.) vol. ix. p. 638.

Hab. Unalaska, Kamtschatka.

Although this shell is uniformly of larger size than the preceding, the cancellated sculpture is of a smaller character and the epidermis less bristly or tufted.

Species 63. (Mus. Metcalfe.)

FUSUS FORNICATUS. *Fus. testâ ovatâ, ventricosissimâ, anfractibus supernè peculiariter declivibus, deinde angulatis, ad angulum carinatis, carinâ labrum versus in nodis tumidis mutatâ, columellâ basi contortâ; fusco-rufescente.*

THE VAULTED FUSUS. Shell ovate, extremely ventricose, whorls peculiarly slanting round the upper part, then angulated, keeled at the angle, keel changed towards the lip into swollen nodules, columella twisted at the base; reddish-brown.

GRAY, Beechey's Voy. Blossom, p. 117.

Murex fornicatus, Gmelin.

Hab. —— ?

Of a more smooth horny character than *F. despectus*, whilst the whorls slant round the upper part in a peculiar manner, and the angular keel becomes changed towards the lip, into one or two large swollen nodules.

Species 64. (Mus. Metcalfe.)

FUSUS PASTINACA. *Fus. testâ fusiformi, tenui, tumidiusculâ, anfractibus supernè leviter concavis, deinde obsoletè nodosis, undique spiraliter sulcatis, sulcis subirregulariter undulatis, binis; albâ, epidermide tenui lutescente indutâ.*

THE PARSNIP FUSUS. Shell fusiform, thin, rather swollen, whorls slightly concave round the upper part, then obsoletely nodose, spirally grooved throughout, grooves somewhat irregularly waved, two and two; white, covered with a thin yellowish epidermis.

Hab. Australia.

A shell of very delicate structure quite unlike any former species.

65.

66.

34 b.

67.a.

LIBRARY OF THE BOMBAY BRANCH OF THE ROYAL ASIATIC SOCIETY

67. b.

Sowerby, del. et lith.

Reeve, Benham & Reeve, imp.

FUSUS.

PLATE XVII.

Species 65. (Mus. Taylor.)

FUSUS GRADATUS. *Fus. testâ fusiformi, canali longiusculo, anfractibus transversim undique liratis, medio ventricosis, obliquè plicato-costatis; lutescente-albâ, ferrugineo-fusco tinctâ.*

THE GRADUATED FUSUS. Shell fusiform, canal rather long, whorls transversely ridged throughout, ventricose in the middle, obliquely plicately ribbed; yellowish-white, stained with rust-brown.

Hab. ——?

This specimen appears to be of somewhat immature growth, but I cannot, after the most careful examination, refer it to any species hitherto described.

Species 66. (Mus. Cuming.)

FUSUS USTULATUS. *Fus. testâ subobeso-fusiformi, anfractibus supernè rotundatis et ventricosis, transversim liratis, longitudinaliter subobsoletè plicatis; ferrugineo-fuscescente.*

THE SCORCHED FUSUS. Shell somewhat stoutly fusiform, whorls rounded and ventricose, transversely ridged, longitudinally rather obsoletely plicated; rust-brown.

Hab. ——?

The whorls of this species are peculiarly rounded at the upper part, and the faint plicated sculpture is distinguished by its darker colour.

Species 34. (Fig. 34, *b*. Mus. Metcalfe.)

FUSUS BECKII. The accompanying figure is a front view of the species represented at Pl. VIII., under the name *ventricosus*, Beck, which being already occupied by Mr. Gray, I propose to change to *Beckii*. The specimen is a more characteristic one, and shows more distinctly in what its peculiarities consist.

Species 67. (Mus. Cuming.)

FUSUS CUMINGII. *Fus. testâ oblongo-fusiformi, medio ventricosâ, anfractibus transversim sulcatis, medio acutè angulatis, ad angulum tuberculatis, tuberculis compressis, mucronatis; columellâ basi uniplicatâ; albidâ, rufo-fusco hic illic flammulatâ.*

CUMING'S FUSUS. Shell oblong-fusiform, ventricose in the middle, whorls transversely grooved, sharply angled, tubercled at the base, tubercles compressed, sharp-pointed; columella with a single plait at the base; whitish, flamed here and there with reddish brown.

JONAS, MSS.

Hab. China.

This striking new species having been named in manuscript after Mr. Cuming by Dr. Jonas of Hamburgh, I have much pleasure in giving it publicity.

68.

70 a.

69.

70. b.

70. c

Sowerby del. et lith.

Reeve, Benham & Reeve, imp.

FUSUS.

PLATE XVIII.

Species 68. (Mus. Belcher.).

FUSUS SPECTRUM. *Fus. testâ elongato-fusiformi, anfractibus convexis, transversim subtilissimè striatis, longitudinaliter tuberculatis, tuberculis apicem versus peculiariter fortibus et conspicuis, anfractûs ultimi ferè evanidis, nisi in carinam, acutè compressam; albâ, epidermide tenui lutescente indutâ.*

THE SPECTRE FUSUS. Shell elongately fusiform, whorls convex, transversely very finely striated, longitudinally tuberculated, tubercles peculiarly strong and conspicuous towards the apex, of the last whorl faded away except in showing a sharply compressed keel; white, covered with a thin yellowish epidermis.

ADAMS and REEVE, Moll. Voy. Samarang.

Hab. Eastern Seas; Belcher.

A curious species, distinguished by the forcible manner in which the tubercles are developed towards the apex, whilst in the last whorl they become resolved into a faintly nodulous keel.

Species 69. (Mus. Belcher.)

FUSUS GRACILLIMUS. *Fus. testâ gracillimo-fusiformi, undique spiraliter sulcatâ et liratâ, anfractibus rotundatis, longitudinaliter plicato-costatis, costis latiusculis, medio unicarinatis, labrum versus evanidis; castaneo-fuscescente.*

THE VERY SLENDER FUSUS. Shell very slenderly fusiform, spirally grooved and ridged throughout, whorls rounded, longitudinally plicately ribbed, ribs rather broad, keeled round the middle, fading towards the lip; light chesnut-red.

ADAMS and REEVE, Moll. Voy. Samarang.

Hab. Eastern Seas; Belcher.

This delicate little species approximates closely to the *F. longicaudatus*, but is clearly distinct.

Species 70. (Mus. Metcalfe.)

FUSUS NOVÆ HOLLANDIÆ. *Fus. testâ elongato-fusiformi, anfractibus rotundatis, liris fortibus transversis costisque longitudinalibus nitidè clathratis; albâ, epidermide fibrosâ indutâ.*

THE NEW HOLLAND FUSUS. Shell elongately fusiform, whorls rounded, neatly latticed with strong transverse ridges and longitudinal ribs; white, covered with a fibrous epidermis.

Hab. New Holland.

A very characteristic new species, for which I am indebted to the kindness of Wm. Metcalfe, Esq.

January, 1848.

71.

72.

73.

74.

75.a.

75.b.

76.

77.

78.

79.

Sowerby del. et lith.

Reeve, Benham & Reeve, imp.

FUSUS.

PLATE XIX.

Species 71. (Mus. Metcalfe.)

FUSUS FRAGOSUS. *Fus. testâ gracili-fusiformi, spiræ suturis impressis, anfractibus rotundatis, longitudinaliter plicato-costatis, carinis numerosis, costas super leviter nodulosis, cingulatis; albidâ.*

THE ROUGH FUSUS. Shell slenderly fusiform, sutures of the spire impressed, whorls rounded, longitudinally plicately ribbed, encircled by numerous keels which are slightly nodulous upon the ribs; whitish.

Hab. —— ?

A delicately sculptured species with the keels very distinctly and neatly carved.

Species 72. (Mus. Cuming.)

FUSUS MAROCCANUS. *Fus. testâ fusiformi-turritâ, sinistrali, canali subcontorto, anfractibus rotundatis, concentricè plicato-costatis, liris angustis subconfertis cingulatis, interstitiis excavatis, lirâ minutissimâ interveniente; ferrugineo-fuscâ.*

THE MOROCCO FUSUS. Shell fusiformly turreted, sinistral, canal somewhat twisted, whorls rounded, concentrically plicately ribbed, encircled with narrow rather close-set ridges, the interstices being excavated with a very minute ridge intervening; rust-brown.

Murex Maroccanus, Chemnitz, Conch. Cab. vol. iv. p. 62. pl. 105. f. 896.

Fusus sinistralis, Lamarck.

Hab. —— ?

The name given to this species by Chemnitz must have priority.

Species 73. (Mus. Cuming.)

FUSUS FICULA. *Fus. testâ subpyriformi, spirâ breviusculâ, anfractibus longitudinaliter costatis, costis subdistantibus, supernè obtusè carinatis, deinde concavis, infra lineis elevatis funiculatis; fuscescente, lineis rufo-fuscescentibus.*

THE LITTLE FIG FUSUS. Shell somewhat pyriform, spire rather short, whorls longitudinally ribbed, ribs somewhat distant, obtusely keeled round the upper part, then hollow, and corded beneath with raised lines; light brown, lines reddish-brown.

Hab. Manila; Cuming.

Besides the raised lines noticed above as encircling the shell, a very minute one may be discerned in the interstices between each.

Species 74. (Mus. Cuming.)

FUSUS CRATICULATUS. *Fus. testâ Muriciformi, anfractibus medio ventricosis, infra planulatis, undique scabroso-lineatis, infra angulum liratis, longitudinaliter plicatis, ad angulum compresso-nodosis; rufo-fuscescente, intus albidâ.*

THE GRATED FUSUS. Shell Murex-shaped, whorls ventricose in the middle, flattened above, scabrously lineated throughout, ridged beneath the angle, longitudinally plicated, compressly noduled at the angle; reddish brown, interior whitish.

DE BLAINVILLE, Faun. Française, p. 87. pl. 4. D. f. 3.

Hab. Mediterranean.

An extremely delicate and pretty species of comparatively rare occurrence.

Species 75. (Mus. Belcher.)

FUSUS ACUS. *Fus. testâ lanceolato-fusiformi, gracillimi, solidiusculâ, anfractibus longitudinaliter plicato-costatis, spiraliter sulcatis, sulcis subtilibus, confertis, peculiariter plano-excavatis; aperturâ parvâ, canali ferè clauso; rufo-ferrugineâ.*

THE NEEDLE FUSUS. Shell lanceolately fusiform, very slender, rather solid, whorls longitudinally plicately ribbed, spirally grooved, grooves fine, close-set, peculiarly flatly excavated; aperture small, canal almost closed; reddish rust-colour.

ADAMS and REEVE, Moll. Voy. Samarang.

Hab. China Sea off Borneo; Adams.

A very narrow lanceolate shell of peculiar solid growth.

Species 76. (Mus. Cuming.)

FUSUS CLATHRATUS. *Fus. testâ oblongo-fusiformi, canali subcontorto, anfractibus rotundatis, lævibus, undique concentricè lamellatis; albâ.*

THE LATTICED FUSUS. Shell oblong-fusiform, canal slightly twisted, whorls rounded, smooth, concentrically lamellated throughout; white.

Tritonium clathratum, Müller, Zool. Danica.

Hab. Greenland.

A species, quite unknown to me, described and figured in the Zoology of Beechey's Voyage, p. 118. pl. 36. f. 13, has very much the character of this, but is of a more pyriform shape with a shorter spire.

Species 77. (Mus. Cuming.)

FUSUS MEXICANUS. *Fus. testâ ovato-fusiformi, anfractibus supernè plano-concavis, infra angulum plicato-costatis, liris transversis, conspicuis nitidè clathratis; purpureo-fuscescente, liris luteo-albidis.*

THE MEXICAN FUSUS. Shell ovately fusiform, whorls flatly convex round the upper part, plicately ribbed beneath, neatly latticed with conspicuous transverse ridges; light purple-brown, ridges yellowish-white.

Hab. Mexico.

A neatly-sculptured species, distinguished by the light yellowish colour of the ridges upon a purple brown ground.

Species 78. (Mus. Cuming.)

FUSUS CINEREUS. *Fus. testâ ovato-fusiformi, anfractibus supernè tumidiusculis longitudinaliter plicato-costatis, lineis elevatis transversis nitidè clathratis, cinereo-cærulescente, costis lineisque albidis, aperturæ fauce castaneo-fuscâ.*

THE ASHY FUSUS. Shell ovately fusiform, whorls rather swollen round the upper part, longitudinally plicately ribbed, neatly latticed with transverse raised lines; ashy-blue, ribs and lines whitish, interior of the aperture chesnut-brown.

SAY, Amer. Conch. pl. 29.

Hab. United States.

Distinguished by its ash-blue ground colour and dark chocolate-brown interior.

Species 79. (Mus. Belcher.).

FUSUS CANDELABRUM. *Fus. testâ tenui, subpyriformi, anfractibus lævibus, supernè excavato-impressis, longitudinaliter plicato-lamellatis, lamellis distantibus, supernè mucronatis, suberectis; aurantio-fuscescente.*

THE CHANDELIER FUSUS. Shell thin, somewhat pyriform, whorls smooth, excavately impressed round the upper part, longitudinally plicately lamellated, lamellæ distant, pointed and erect at the top; light orange-brown.

ADAMS and REEVE, Moll. Voy. Samarang.

Hab. —— ?

This curious little shell is of somewhat immature growth and might easily be taken for the young of *Pyrula Belcheri*.

80.

81. *a.*

81. *b.*

82

82. *a.*

82. *b.*

84. *a.*

84. *b.*

85

Sowerby, del. et lith.

Reeve, Benham, & Reeve, imp.

FUSUS.

PLATE XX.

Species 80. (Mus. Cuming.)

FUSUS MINUTISQUAMOSUS. *Fus. testâ subelongato-fusiformi, canali breviusculâ, anfractibus rotundis, longitudinaliter rudè plicato-costatis, spiraliter subtiliter crebriliratis, liris undique minutè squamatis; fuscescente-albâ.*

THE MINUTELY-SCALED FUSUS. Shell somewhat elongately fusiform, canal rather short, whorls round, longitudinally rudely plicately ribbed, spirally finely ridged, ridges minutely scaled throughout; brownish white.

Hab. —— ?

The sculpture of this species is truly exquisite, the entire surface being elaborately carved with rows of minute scales, after the manner of the *F. squamulosus* of Philippi, a different shell, for which see *Murex*, Pl. XXXV. Sp. 184.

Species 81. (Mus. Cuming.)

FUSUS PULCHELLUS. *Fus. testâ subelongato-fusiformi, anfractibus rotundis, medio tumidiusculis, longitudinaliter costatis, costis subdistantibus, spiraliter crebriliratis, liris acutiusculis, duabus centralibus prominentioribus, carinæformibus; fulvo-spadiceâ, costarum parte superiori intensè castaneo-rufâ.*

THE PRETTY FUSUS. Shell somewhat elongately fusiform, whorls round, rather swollen in the middle, longitudinally ribbed, ribs somewhat distant, spirally closely ridged, ridges rather sharp, the two central ones more prominent, keel-like; fulvous fawn-colour, upper part of the ribs deep chesnut-red.

PHILIPPI, Enum. Moll. Sicil., vol. ii. p. 178. pl. 25. f. 28.

Hab. Mediterranean.

An interesting species, peculiarly characterized by the dark chesnut-red colouring of the upper portion of the ribs.

Fig 82. (Mus. Hanley.)

The shell here represented has been kindly handed to me by Mr. Hanley, with an opinion that it is distinct from the *F. corneus*, in company with which species it has been frequently taken on our shores. I refrain, however, from describing or naming it, as the subject will, no doubt, be better treated in the valuable work on the British Shells and Mollusca now in course of publication by himself and Professor Edward Forbes.

Species 83. (Mus. Howse.)

FUSUS TURTONI. *Fus. testâ ovato-turritâ, crassiusculâ, spirâ enormiter acuminato-productâ, apice papillari; anfractibus spiraliter striatis, supernè concavis, vix angulatis; aperturâ amplâ, labro incrassato, subreflexo; albidâ.*

TURTON'S FUSUS. Shell ovately turreted, rather thick, spire enormously acuminately produced, with a papillary apex; whorls spirally striated, concave round the upper part, slightly angulated, aperture large, lip thickened, a little reflected; whitish.

BEAN, Ann. and Mag. Nat. Hist. vol. i. p. 493; and vol. xix. pl. x.

Hab. Coast of Northumberland, Britain; Howse.

This shell, of which two or three specimens have been taken by the fishermen off the coast of Northumberland and Durham, has all the appearance of being an extraordinary state of the *F. Norvegicus*, with the spire long drawn out; and I much doubt whether it is strictly entitled to the specific importance which has been attached to it. In a very interesting paper by Mr. Richard Howse (Ann. and Mag. Nat. Hist. vol. xix. p. 160), descriptive of the result of a dredging excursion off the coast of Durham, a comparison is instituted between the ova-capsules of the *F. Turtoni* and *Norvegicus*, showing the difference in their form and in that of their contents; it is obvious, however, that the shortened or prolonged state of the spire would be the same in its proportion in all stages of growth, and that these different conditions of the species would in like manner influence the form of the capsules.

Species 84. (Mus. Taylor.)

FUSUS CORRUGATUS. *Fus. testâ ovato-fusiformi, tenuiculâ, columellâ subintortâ, canali brevi; anfractibus quinis senisve, supernè depressiusculis, deinde convexis, plicis longitudinalibus frequentibus irregularibus, liris angustis rotundis undique creberrimè clathratis; fulvescente-albâ.*

THE CRUMPLED FUSUS. Shell ovately fusiform, rather thin, columella slightly twisted, canal short; whorls five or six in number, rather depressed round the upper part, then convex, very closely latticed throughout with frequent irregular longitudinal folds and narrow round ridges; pale fulvous white.

Hab. —— ?

A rather light shell, approaching some of the *Buccina* in form, most elaborately sculptured throughout with a closely latticed pattern.

Species 85. (Mus. Taylor.)

FUSUS TAYLORIANUS. *Fus. testâ pyramidali-fusiformi, canali brevi, anfractibus medio tumidis et subangulatis, longitudinaliter fortiter costatis, spiraliter striatis, striis elevatis, costas super prominentioribus; luteo-fuscescente, anfractuum parte inferiori castaneo-fusco conspicuè maculatâ, costis albidis, interstitiis obscurè fusco-punctatis.*

TAYLOR'S FUSUS. Shell pyramidally fusiform, canal short, whorls swollen and somewhat angled in the middle, longitudinally strongly ribbed, spirally striated, striæ raised, more prominent upon the ribs; yellowish brown, lower part of the whorls conspicuously blotched with chesnut brown, ribs whitish, interstices obscurely dotted with brown.

Hab. —— ?

An extremely interesting species, of which Mr. Taylor possesses the only two specimens I have seen, one of which is reversed. Though resembling Philippi's *F. pulchellus* in general aspect, it will be found to differ materially on comparison. It has all the appearance of being a more exotic species, the whorls are more ventricose, the ribs more robust, and the dark colouring, it will be observed, is not on the ribs, which, on the contrary, are white, but in the interstices.

86.

87. a.

87. b.

88. a.

88. b.

89.

91. a.

90. a.

90. b.

91. b.

Sowerby del et lith.

Reeve, Benham & Reeve, imp.

FUSUS.

PLATE XXI.

Species 86. (Mus. Cuming.)

FUSUS BARVICENSIS. *Fus. testâ eleganter fusiformi, anfractibus longitudinaliter pulcherrimè fimbriato-laminatis, laminis transversim subtiliter costatis, supernè mucronatis; cærulescente-albâ.*

THE BERWICK FUSUS. Shell elegantly fusiform, whorls longitudinally very beautifully fimbriately laminated, laminæ transversely finely ribbed, pointed at the upper part; bluish white.

JOHNSTON, Edin. Phil. Mag. vol. xiii. p. 221.

Hab. Northern shores of Britain.

The discovery of this species formed an extremely interesting addition to the shells of the British Isles; its chief peculiarity consists in the laminæ being pointed at the upper part and beautifully fimbriately ribbed across.

Species 87. (Mus. Cuming.)

FUSUS ELEGANS. *Fus. testâ gracili-fusiformi, sinistrorsi, supernè latè excavatis, anfractibus longitudinaliter costatis, spiraliter undique elevato-striatis; albâ.*

THE ELEGANT FUSUS. Shell slenderly fusiform, sinistral, whorls broadly excavated round the upper part, longitudinally ribbed, spirally elevately striated throughout; white.

Hab. —— ?

An elegantly formed species of sinistral growth in which the upper portion of the whorls is widely excavated and smooth. It is perfectly distinct from *F. Maroccanus*.

Species 88. (Fig. *a*, Mus. Hanley; Fig. *b*, Mus. Cuming.)

FUSUS MURICATUS. *Fus. testâ subelongato-fusiformi, anfractibus rotundatis, supernè interdum obscurè angulatis, longitudinaliter plicato-costatis, spiraliter liratis, liris angustis, rotundatis, confertis, costas super muricatis; fulvo-rufescente.*

THE PRICKLY FUSUS. Shell somewhat elongately fusiform, whorls rounded, sometimes obscurely angled round the upper part, longitudinally plicately ribbed, spirally ridged, ridges narrow, rounded, close-set, prickly upon the ribs; light fulvous red.

Murex muricatus, Montagu, Test. Brit. vol. i. p. 262. pl. 9. f. 2.

Fusus echinatus, Philippi.

Hab. Salcombe Bay; Montagu. Mediterranean; Philippi.

This interesting species, first discovered by Montagu, is well described and figured in the 'Testacea Britannica;' it is very closely encircled throughout with transverse rounded ridges, which are nodulous or prickly on crossing the longitudinal plicate ribs, and give a fimbriated character to the lip.

Species 89. (Mus. Cuming.)

FUSUS PULLUS. *Fus. testâ cylindraceâ, fusiformi, tenui, canali brevissimo; anfractibus convexis, spiraliter subtilissimè striatis; columellâ plano-concavâ; intus extusque sordidè fuscâ.*

THE SOMBRE FUSUS. Shell cylindrically fusiform, thin, canal very short; whorls convex, spirally very finely striated; columella flatly concave; dull brown within and without.

Hab. Newfoundland; Jukes.

A thin dark brown species with the surface closely delicately striated and the columella concavely flattened.

Species 90. (Fig. *a*, Mus. Hanley; Fig. *b*, Mus. Cuming.)

FUSUS BANFFIUS. *Fus. testâ oblongo-fusiformi, anfractibus rotundatis, subventricosis, concentricè rudè et irregulariter laminatis; canali subintortâ; albidâ aut fuscescente.*

THE BANFF FUSUS. Shell oblong-fusiform, whorls rounded, somewhat ventricose, concentrically rudely and irregularly laminated; canal slightly twisted; whitish or pale brown.

Murex Banffius, Pennant, Brit. Zool. vol. iv. p. 284. pl. 82. f. 5.

Hab. West coast of Scotland; Mc Andrew. Massachusetts, United States (occasionally found in the stomachs of fishes); Gould.

A species well-known to our northern shores, characterized by a close succession of rude longitudinal laminar ridges approximating in general character to some of the Greenland forms.

Species 91. (Mus. Hanley.)

FUSUS GUNNERI. *Fus. testâ fusiformi, anfractibus rotundatis, ventricosis, concentricè laminatis, laminis subrudibus, conspicuis, supernè auriculatis; pallidè aurantio-fuscescente, laminis albis.*

GUNNER'S FUSUS. Shell fusiform, whorls rounded, ventricose, concentrically laminated, laminæ somewhat rude, conspicuous, auriculated at the upper part; pale orange brown, laminæ white.

Tritonium Gunneri, Loven, Index Moll. Sueciæ, p. 12.

Hab. Greenland.

The main distinguishing feature of this species consists in the laminæ being produced into an auricular scale at the upper part.

FUSUS.

	Plate.	Species.
aciculatus, Delle Chiaje	XIV.	55
aculeiformis, Sowerby	XIV.	52
acus, *Adams & Reeve*	XIX.	75
adustus, Philippi	XIII.	49
Afer, (*Murex*), Gmelin	VI.	21
alternatus, *Philippi*	II.	6
antiquus (*Murex*), Linn.	XI.	44
aureus, *Reeve*	V.	17
Banffius (*Murex*), Pennant	XXI.	90
Barvicensis, *Johnston*	XXI.	86
Beckii, *Reeve*	VIII. & XVII.	34
biangulatus, Deshayes	IX.	36
Blosvillei, *Deshayes*	VI.	25
buxeus, *Reeve*	V.	18
cælatus, *Reeve*	VIII.	35
Cancellarioides, *Reeve*	XV.	59
cancellatus (*Triton*), Lam.	XVI.	62
candelabrum, *Adams & Reeve*	XIX.	79
carinatus, Lamarck	X.	39
cinereus, *Say*	XIX.	78
cinnamomeus, *Reeve*	V.	16
clathratus (*Tritonium*), Muller	XIX.	76
clausicaudatus, *Hinds*	XIV.	54
colus (*Murex*), Linnæus	III.	11
colosseus, *Lamarck*	V.	19
contrarius, *Lamarck*	XII.	46
corneus (*Murex*), Linn.	XI.	43
corrugatus, *Reeve*	XX.	84
craticulatus, *De Blainville*	XIX.	74
crebrilirațus, *Reeve*	V.	20
cretaceus, *Reeve*	XIII.	48
Cumingii, *Jonas*	XVII.	67
decemcostatus, Say	X.	40
deformis, *Reeve*	XII.	45
despectus (*Murex*), Linn.	X.	39
dilatatus, *Quoy*	XIII.	49
distans, *Lamarck*	VII.	28
Dupetit-Thouarsii, *Kiener*	II.	9
echinatus, Kiener	XIV.	51
elegans, *Reeve*	XXI.	87
ficula, *Reeve*	XIX.	73
fornicatus (*Murex*), Gmelin	XVI.	63
fragosus, *Reeve*	XIX.	71
Geversianus (*Buc.*), Pallas	IV.	21
gracillimus, *Adams & Reeve*	XVIII.	69
gradatus, *Taylor*	XVII.	65
Gunneri (*Tritonium*), Loven	XXI.	91
heptagonalis, *Reeve*	VII.	26
incrassatus, Lamarck	III.	12
Islandicus, Lamarck	XI.	43
laciniatus (*Buc.*), Martyn	IV.	14
lancea, Deshayes	XIV.	52
lanceola, *Martini*	XIV.	52
laticostatus, *Deshayes*	VIII.	33
lignarius (*Murex*), Gmelin	II.	5
ligula, Kiener	XIV.	52
lineatus (*Murex*), Chemn.	VII.	31
lividus, Philippi	VI.	25
longicauda, *Bory*	III.	13
longissimus (*Murex*), Gmelin	I.	4
lyratus (*Buc.*), Martyn	X.	40
Mandarinus, *Duclos*	II.	8
marmoratus, *Philippi*	I.	1
Maroccanus (*Murex*), Chemnitz	XIX.	72
Mexicanus, *Reeve*	XIX.	77
minutisquamosus, *Reeve*	XX.	80
multicarinatus, *Lamarck*	VI.	22
muricatus (*Murex*), Mont.	XXI.	88
myristicus, *Reeve*	XV.	57
Nicobaricus (*Murex*), Chemnitz	IX.	37
Nifat, *Adanson*	VII.	30
nobilis, *Reeve*	XV.	60
nodosus (*Buc.*), Martyn	XI.	41
Norvegicus (*Stromb.*), Chemnitz	XII.	47
Novæ Hollandiæ, *Reeve*	XVIII.	70
oblitus, *Kiener*	VII.	29
ocelliferus, *Bory*	I.	3
Oregonensis (*Triton*), Say	XVI.	61
pagoda, *Lesson*	VIII.	32
pastinaca, *Reeve*	XVI.	64
polygonoides, *Lamarck*	IX.	36
proboscidiferus, *Lamarck*	IV.	15
provincialis, De Blainv.	XIV.	55
pulchellus, *Philippi*	XX.	81
pullus, *Reeve*	XXI.	89
pyrulatus, *Reeve*	XIII.	50
raphanus, Lamarck	XI.	41
rostratus (*Murex*), Olivi	XIV.	55
rufus, *Reeve*	XV.	58
sinistralis, Lamarck	XIX.	72
sinistrorsus, Deshayes	XII.	47
spectrum, *Adams & Reeve*	XVIII.	68
Syracusanus (*Murex*), Linnæus	III.	10
strigosus, Lamarck	XIV.	55
Taylorianus, *Reeve*	XX.	85
tessellatus, *Schubert*	XIV.	53
toreuma, *Lamarck*	VII.	27
torulosus, *Lamarck*	VI.	24
Turbinelloides, *Reeve*	XV.	56
tuberculatus, *Lamarck*	IX.	38
tuberosus, *Reeve*	II.	7
turricula, *Kiener*	VI	23
Turtoni, *Bean*	XX.	83
undatus (*Murex*), Gmelin	III.	12
ustulatus, *Reeve*	XVII.	66
vaginatus (*Murex*), Philippi	XIV.	51
ventricosus, *Gray*	XI.	42
verruculatus, Lamarck	I.	3
Zelandicus, Quoy	II.	8

MONOGRAPH

OF THE GENUS

PALUDOMUS.

"Towards the springs
Of Ganges or Hydaspes, Indian streams.—*Milton.*

1a.

2a.

2b.

1b.

3a.

3b.

1c.

4a.

4b.

5.

LIBRARY
ROYAL ASIATIC SOCIETY

Sowerby del. et lith.

Reeve imp.

PALUDOMUS.

PLATE I.

Genus PALUDOMUS, *Swainson.*

Testa ovata, subventricosa, spirâ brevi, nunc depressâ, nunc exsertâ, columellâ subexcavatâ, latiusculâ, planâ, basi integrâ, rotundatâ; aperturâ amplâ, subsemicirculari, supernè paululum canaliculatâ, labro simplici. Epidermis olivacea, fusca atrave. Animal fluviatile, operculo corneo, subtrigono-ovato, concentricè striato.

Shell ovate, somewhat ventricose, spire short, sometimes depressed, sometimes exserted, columella a little excavated, rather broad, flat, entire at the base, rounded; aperture large, somewhat semicircular, slightly channelled at the upper part, lip simple. Epidermis olive, brown or black. Animal fluviatile, with a horny subtriangularly ovate, concentrically striated operculum.

The genus *Paludomus* was founded by Mr. Swainson in his 'Treatise of Malacology', forming Vol. 123 of Lardner's Cabinet Cyclopedia, for the sake of distinguishing an ovate oblong form of *Melania* brought from Ceylon by Dr. Sibbald, and of which three species were figured by Mr. Griffith in his edition of Cuvier's Animal Kingdom. The genus has, however, remained in comparative obscurity from the want of any species being known of sufficiently typical character to render it appreciated. That desideratum has now been supplied by the zeal of Mr. George Gardner of the Royal Botanic Gardens of Ceylon, a gentleman much attached to Natural History, and already known to the scientific world by his interesting botanical researches and 'Travels in the Interior of Brazil.'

Having already figured the *Paludomus loricatus* in anticipation of the genus (Elem. Conch. pl. xviii. f. 100) whilst only one or two other species approaching *Melania* were known, it has been satisfactory to receive such an important typical addition to the group as that afforded by the present series; more especially by the *P. loricatus, Gardneri, Tennantii, undatus, pictus,* and *funiculatus,* all of which are characterized by an oval Nerite-like form which fully entitles them to the generic distinction less significantly awarded by Mr. Swainson to the species verging on *Melania,* and of more doubtful importance.

Of the following species, thirteen are from Ceylon, two from the Himalayan district of India, and one from Point Palmas, Sumatra; and to complete the monograph of the genus may be added *Melania Stephanus,* Benson, Journ. Asiat. Soc. Calcutta, vol. v. p. 747, figured by Philippi in Abb. und Besch. Conch. pl. 1. f. 5, 6, under the name *Melania coronata,* Von dem Busch.; and, apparently belonging to this genus, two species figured by the same author as follows:—*Melania obesa,* Philippi, l. c. pl. iv. f. 3, from New Holland; and *Melania Gruneri,* Jonas, Phil. l. c. pl. iv. f. 2, from Grenada, but the localities of these are doubtful. Lastly may be added a species named (but not described) by Mr. Gray, *Melania retusa,* Griff. Cuv. An. King. pl. 14. f. 9. which I have not succeeded in identifying. I am not aware that the genus exists in any of the streams of North America, but it may be said to be represented by Mr. Say's *Anculosa,* which appears to be as peculiar to the Transatlantic district as *Paludomus* is to the Ceylonese.

Like all fresh-water shells the *Paludomi* are of a dark sombre colour, always more or less eroded at the apex, the Nerite-shaped species exhibit, however, a very characteristic waved pattern interiorly in an incipient stage of growth, which in a more advanced state is entirely overlaid by a deposit of colourless matter, when they are further distinguished by a rich chocolate-brown tint of colouring on the columella and edge of the aperture. The animal is probably little more than a modified condition of the *Melania,* being similar in habit and having the same black horny operculum of a more triangular form.

Species 1. (Fig. *a, b, c.* Mus. Cuming.)

PALUDOMUS LORICATUS. *Pal. testâ obovatâ, spirâ vix exsertâ, anfractibus supernè leviter angulato-depressis, liris squamato-nodosis creberrimè spiraliter cingulatis; aperturâ amplâ; nigerrimo-fuscâ, intus albâ; columellâ et aperturæ limbo purpureo-fuscis.*

THE MAILED PALUDOMUS. Shell obovate, spire scarcely exserted, whorls slightly angularly depressed round the upper part, spirally encircled with close-set squamate ridges; aperture large; very black brown, interior white, columella and edge of the lip purple-brown.

Hab. In rapids flowing from Adam's Peak, Ceylon; Gardner.

The entire surface of this species is closely spirally encircled with noduled ridges, in which particular it differs from all the rest. The nodules appear to have been originally represented by scales which have become closed up.

Species 2. (Fig. *a*, *b*. Mus. Cuming.)

PALUDOMUS UNDATUS. *Pal. testâ obovatâ, spirâ vix exsertâ, anfractibus superne plano-depressis liris tenuibus creberrimè spiraliter cingulatis, quarum postremis subtiliter nodulosis, cæteris lævibus interstitiis omnium longitudinaliter conspicuè elevato-striatis; aperturâ amplâ; nigricante-fuscâ, fasciis nigricantibus obliquè undatis obscurè pictâ, intus cærulescente-albâ, fasciis undatis conspicuis, columellâ albâ, purpureo-nigro tinctâ.*

THE WAVED PALUDOMUS. Shell obovate, spire scarcely exserted, whorls flatly depressed round the upper part, very closely spirally encircled with fine ridges, of which the most posterior are finely noduled, the rest smooth, interstices of the whole conspicuously longitudinally elevately striated; aperture large; blackish brown, obscurely painted with obliquely waved blackish bands, interior blueish white, the waved bands conspicuous, columella white, stained with purple-black.

Hab. In rapids flowing from Adam's Peak, Ceylon; Gardner.

This species differs little in its general aspect from the *P. loricatus*, the ridges are nevertheless finer and only two or three of the upper ones exhibit any indication of nodules; the interstices between the ridges in this species are moreover distinguished by being conspicuously longitudinally striated. I have examined between fifty and sixty specimens of *P. loricatus* in different stages of growth, but find no state of it with any approximation in these respects.

Species 3. (Fig. *a*, *b*. Mus. Cuming.)

PALUDOMUS NERITOIDES. *Pal. testâ oblongo-ovatâ, spirâ subexsertâ, anfractibus rotundatis, obscurè obtusoliratis; aperturâ subamplâ; olivaceâ, fuscâ, in testâ juniore acutè undatâ, intus albidâ, columellâ et aperturæ limbo nigricante-fuscis interdum hic illic maculatis.*

THE NERITE-LIKE PALUDOMUS. Shell oblong-ovate, spire a little exserted, whorls rounded, obscurely obtusely ridged; aperture rather large; olive, sharply waved in the young shell with brown, interior white, columella and edge of the lip sometimes blotched here and there with blackish brown.

Hab. In the bed of a river at Ambegamoa, Ceylon; Gardner.

This species has more the form of a *Nerite* than any other, and is distinguished in an early stage of growth by a brilliant pattern of zigzig painting in the interior. The lip and columella are sometimes white, sometimes blotched with blackish brown.

Species 4. (Fig. *a*, *b*. Mus. Cuming.)

PALUDOMUS GLOBULOSUS. *Pal. testâ globulosâ, solidâ, spirâ plano-depressâ, anfractibus superne tumidis, undique lævigatis; olivaceâ, aperturâ albidâ, nigro conspicuè trifasciatâ.*

THE GLOBULAR PALUDOMUS. Shell globular, solid, spire flatly depressed, whorls swollen round the upper part, smooth throughout; olive, aperture whitish, conspicuously marked with three black bands.

Melania globulosa. Gray in Griff. Cuvier, pl. 14. f. 6.

Hab. In the bed of a river at Ambegamoa, Ceylon; Gardner.

Distinguished from all others at present known by its solid globular form; it is figured and named in Griffith's Cuvier, as above referred to, but not described.

Species 5. (Mus. Cuming.)

PALUDOMUS OLIVACEUS. *Pal. testâ ovatâ, apicem versus attenuatâ, spirâ exsertâ, anfractibus undique lævigatis, aperturâ mediocri, labro subeffuso; olivaceâ, nigro hic illic maculatâ, aperturâ nigerrimo-fuscâ, limbo albido, nigro tessellato.*

THE OLIVE PALUDOMUS. Shell ovate, attenuated towards the apex, spire exserted, whorls smooth throughout, aperture middling, lip somewhat effused; olive, spotted here and there with black, aperture very dark brown, lip whitish, tessellated with black.

Hab. Point Palmas, Island of Sumatra (in a muddy stream).

Distinguished by its rounded form, spirally banded painting and dark interior articulated at the lip.

6.

7a.

8 a.

9 a.

10 a.

10 b.

9 b.

14a.

14b.

11.

Sowerby, del. et lith.

Reeve, imp.

PALUDOMUS.

PLATE II.

Species 6. (Mus. Cuming.)

PALUDOMUS NIGRICANS. *Pal. testâ ovatâ, spirâ prominulâ exsertâ, anfractibus lævibus, basin versus subindistinctè angulatis; nigricante, intus cærulescente-albâ.*

THE BLACKISH PALUDOMUS. Shell ovate, spire rather prominent, exserted, whorls smooth, faintly angled towards the base; blackish, interior blueish white.

Hab. Ceylon (in mountain streams at 6,000 feet elevation); Gardner.

This little species partakes a great deal of the character of *Melania*, being about intermediate between the genera.

Species 7. (Fig. *a* and Pl. III. Fig. 7. *b*, *c*. Mus. Cuming.)

PALUDOMUS CHILINOIDES. *Pal. testâ ovatâ, tenuiculâ, spirâ parvâ, exsertâ, anfractibus supernè depressis, lævibus; olivaceâ, nigro longitudinaliter undatâ.*

THE CHILINA-LIKE PALUDOMUS. Shell ovate, rather thin, spire small, exserted, whorls depressed round the upper part, smooth; olive, longitudinally waved with black, aperture white.

Hab. Bed of the Mahawelle Ganga, near Kandy, Ceylon; Gardner.

Found abundantly in the stream above noted; the chief variation of form consists in the whorls being more or less depressed round the upper part, after the manner of a *Chilina*, with the spire varying considerably in its elevation.

Species 8. (Fig. *a* and Pl. III. Fig. 8 *b*, *c*. Mus. Cuming.)

PALUDOMUS SULCATUS. *Pal. testâ ovatâ, spirâ prominulâ, anfractibus rotundatis, spiraliter creberrimè sulcatis, sulcis lirisque intermediis striis longitudinalibus creberrimè decussatis; luteo-olivaceâ, nigricante hic illic pictâ, interdum totâ nigrâ, intus albidâ.*

THE GROOVED PALUDOMUS. Shell ovate, spire prominent, whorls rounded, spirally very closely grooved, grooves and intermediate ridges very closely decussated with longitudinal striæ; yellowish olive, painted here and there with black, sometimes entirely black, interior whitish.

Hab. In a mountain stream at Ratnapoora, Ceylon; Gardner.

A neatly grooved species of a light yellow olive with a few black waved spots, as represented in Pl. III. Fig. 8, *b*, *c*, or entirely black as at Fig. 8 *a*.

Species 9. (Fig. *a*, *b*, Mus. Cuming.)

PALUDOMUS GARDNERI. *Pal. testâ orbiculari-ovatâ, spirâ plano-depressâ, anfractibus regulariter convexis, creberrimè spiraliter liratis, liris tenuiusculis, obtusis, alternatim majoribus; aperturâ peramplâ; aterrimâ, intus albidâ, columellâ et aperturæ limbo purpureo-nigro tinctis.*

GARDNER'S PALUDOMUS. Shell orbicularly ovate, spire flatly depressed, whorls regularly convex, very closely spirally ridged, ridges rather thin, obtuse, alternately larger; aperture very large; jet black, interior whitish, columella and margin of the aperture stained with purple-black.

Hab. In a stream at the foot of Adam's Peak, Ceylon; Gardner.

The most characteristic species of the genus and farthest removed from the *Melania* type; I therefore name it in honour of its discoverer, George Gardner, Esq., a gentleman well known to botanists and horticulturists by his productive researches in the great Orchid country of Brazil, and to the public in general by the interesting narrative of his 'Travels'.

Species 10. (Fig. *a*, *b*. Mus. Cuming.)

PALUDOMUS PICTUS. *Pal. testâ oblongo-ovatâ, spirâ exsertâ, anfractibus spiraliter obtusè striatis; olivaceâ, fasciis nigris undulatis angustis longitudinaliter pictâ, intus albidâ, columellæ margine fusco tincto.*

THE PAINTED PALUDOMUS. Shell oblong ovate, spire exserted, whorls spirally obtusely striated; olive, painted longitudinally with narrow undulated waved bands, interior white, margin of the columella stained with brown.

Hab. In a mountain stream at Ratnapoora, Ceylon; Gardner.

The waved painting may be observed in adult specimens on the outside, when not visible in the interior.

Species 11. (Mus. Cuming.)

PALUDOMUS STEPHANUS. *Pal. testâ subglobosâ, spirâ exsertâ, anfractibus lævibus, supernè conspicuè angulatis, ad angulum nodis mucronatis parvis coronatis; olivaceâ, intus albidâ.*

THE CORONATED PALUDOMUS. Shell somewhat globose, spire exserted, whorls smooth, conspicuously angled round the upper part, coronated at the angle with small pointed nodules.

Melania Stephanus, Benson, Journ. Asiat. Soc. Calcutta, vol. v. p. 747.

Melania coronata, v. d. Busch, Philippi.

Hab. Bengal.

For coronated species like the present, Mr. Swainson proposed the subgeneric name *Hemimitra*.

12 a.

7 b.

7 c.

12 b.

8 b.

8 c.

12 c.

14 c.

13.

15.

Sowerby del. et lith.

Reeve, imp.

PALUDOMUS.

PLATE III.

Species 12. (Fig. *a*, *b*, *c*, Mus. Cuming.)

PALUDOMUS TENNANTII. *Pal. testâ obovatâ, crassiusculâ, spirâ vix exsertâ; anfractibus rotundatis, lævibus aut obscurissimè liratis; aperturâ subampliter effusâ; olivaceâ, fusco indistinctè longitudinaliter undatâ, intus albidâ, columellâ et aperturæ limbo purpureo-fusco tinctis.*

TENNANT'S PALUDOMUS. Shell obovate, rather thick, spire scarcely exserted; whorls rounded, smooth, or very obscurely ridged; aperture rather largely effused; olive, indistinctly longitudinally waved, interior white, columella and edge of the aperture stained with purple-brown.

Hab. In a rocky stream flowing from Adam's Peak, Ceylon; Gardner.

An equally interesting species with the *P. Gardneri*, distinguished in early growth by an elaborate pattern of waved painting, which is very conspicuous in the interior of the shell. At a more advanced period, this striking display of pattern is entirely obscured by a superincumbent deposit of colourless matter.

By the title given to this species I wish to honour the name of Sir Emerson Tennant of Ceylon, whose zeal in this department of Natural History may serve to promote the discovery of other genera, which, like the present, are almost indigenous to that country.

Species 13. (Mus. Cuming.)

PALUDOMUS FUNICULATUS. *Pal. testâ oblongo-ovatâ, spirâ exsertâ, anfractibus supernè depressiusculis, liris subdistantibus obtusis spiraliter funiculatis; nigerrimo-fuscâ, intus albidâ.*

THE CORDED PALUDOMUS. Shell oblong-ovate, spire exserted, whorls rather depressed round the upper part, spirally corded with rather distant obtuse ridges; jet brown, interior whitish.

Hab. In a mountain stream at Ratnapoora, Ceylon; Gardner.

Of a dark sombre colour, without any indication of pattern, encircled throughout with rather distant ridges.

Species 14. (Pl. II. Fig. *a* and *b*, Pl. III. Fig. *c*. Mus. Cuming.)

PALUDOMUS CONICUS. *Pal. testâ subglobosâ, spirâ exsertâ, anfractibus rotundatis, lævibus nisi ad basin et per suturas indistinctè sulcatis; aperturâ mediocri, labro subobscurè denticulato; castaneo-fuscâ, intus albidâ.*

THE CONICAL PALUDOMUS. Shell somewhat globose, spire exserted, whorls rounded, smooth unless indistinctly grooved towards the base and along the sutures; aperture moderate, lip somewhat obscurely denticulated; chesnut brown, interior whitish.

Melania conica, Gray in Griffith's Cuvier, pl. 14. f. 5.

Hab. Himalaya, India; Benson, Dr. Cantor.

A rounded shell, with the spire more or less exserted, and perfectly smooth, excepting along the sutures and towards the base where there are faint superficial grooves, causing the lip to be slightly denticulated.

This is one of the species referred to by Mr. Swainson for the illustration of his genus, but we are now acquainted with several, *P. loricata*, *Gardneri*, *Tennantii*, and *Neritoides*, for example, more typical of the character upon which he founded it.

Species 15. (Mus. Cuming.)

PALUDOMUS SPIRALIS. *Pal. testâ ovatâ, spirâ amplâ, prominulâ, anfractibus rotundatis, lævibus; olivaceâ, nigro hic illic maculatâ, intus albâ.*

THE SPIRAL PALUDOMUS. Shell ovate, spire large, prominent, whorls rounded, smooth; olive, spotted here and there with black, interior white.

Hab. Streams of Ceylon; Dr. Sibbald.

This little species, which is quite on the confines of the genus passing into *Melania*, was brought from Ceylon some years since by Dr. Sibbald.

MONOGRAPH

OF THE GENUS

T U R B O.

"Of fairest colours mixed,
Ruddy and gold."—*Milton.*

1 a.

1 b.

2.

3 a, c.

3 b.

Sowerby, del. et lith.

Reeve, imp.

TURBO.

PLATE I.

Genus TURBO, *Linnæus.*

Testa turbinata, crassiuscula, interdum umbilicata, intus argentea rarò aureo-margaritacea, anfractibus plus minusve rotundatis, aut rugosis aut glabris, marginibus disjunctis. Operculum testaceum, interdum corneum.

Shell turbinated, rather thick, sometimes umbilicated, interior silver, rarely golden-pearly, whorls more or less rounded, rough or smooth, with the margins disjoined. Operculum testaceous, sometimes horny.

The shells of this genus are remarkable for their beautiful symmetry of form, and vivid admixture of colours; they are comparatively limited in species and under the acknowledged type assigned to them by Lamarck, may be readily distinguished from the *Monodontæ*, *Trochi* and others of the turbinate family.

The *Turbines* are sometimes smooth, almost porcellanous, but mostly spirally ribbed or grooved, and their variations of sculpture are mainly exhibited in scales or laminæ. The interior and chief substance of the shell consists of pearly nacre often very iridescent, and in one or two instances of a golden hue.

The operculum of the *Turbines* offers a more curious variety of structure than that of any other genus, differing occasionally to a remarkable extent in species perfectly similar in form and general character, whilst in shells of very opposite structure they are frequently the same. The same heavy stony operculum which is common to *Turbo* is found also in *Trochus*, and the horny operculum of *Trochus* is also to be met with in *Turbo*. It is certain that the opercula of the *Turbinacea* family furnish no characters for generic arrangement, but are well worth observing in reference to their specific variation. In most species the operculum is of a solid testaceous substance, sometimes smooth, sometimes granulous, in others it is deeply circularly grooved, the ridges being granulated or serrated, then again it is composed of a crowded tuft of club-shaped particles. In all these the inner surface is coated with a horny layer, and in one or two instances the operculum is entirely horny.

The genus *Turbo* is far less numerous in species than *Trochus* or *Monodonta*, and there are not more than two or three of small size. They only inhabit warm seas and are confined within a much narrower tropical limit than others of the family.

Species 1. (Mus. Cuming.)

TURBO NATALENSIS. *Turb. testâ vix imperforatâ, orbiculari, depressiusculâ, anfractibus spiraliter sulcatis, sulcis regulariter concavis, latiusculis; olivaceo-viridescente, rufo radiatim maculatâ et punctatâ, intus argenteâ; operculo testaceo, cristato.*

THE NATAL TURBO. Shell slightly imperforated, orbicular, somewhat depressed, whorls spirally grooved, grooves regularly concave, rather broad; olive-green, radiately blotched and spotted with red, interior silver; operculum testaceous, tufted.

Hab. Port Natal; Wahlberg.

The operculum of this beautiful species is a tufted mass like that of the *T. sarmaticus*.

Species 2. (Mus. Cuming.)

TURBO MARMORATUS. *Turb. testâ imperforatâ, suborbiculari, ventricosissimâ, anfractibus lævibus, aut concentricè striatis, supernè depresso-concavis, infra nodis grandibus tumidiusculis vel carinis bi- triseriatim cinctis; viridi, fusco-rufo alboque marmoratâ, intus margaritaceâ; operculo testaceo, crasso.*

THE MARBLED TURBO. Shell imperforated, somewhat orbicular, very ventricose, whorls smooth or concentrically striated, depressly concave round the upper part, encircled beneath with two or three keels or rows of nodules; green, marbled with white and red-brown, interior pearly; operculum testaceous, thick.

LINNÆUS, Syst. Nat. (12th edit.) p. 1134.

Eadem. *Turbo olearius*, Linnæus.

Hab. Island of Mindanao, Philippines; Cuming.

Found in great abundance in the Eastern Seas, and the largest of the genus.

Species 3. (Mus. Cuming.)

TURBO UNDULATUS. *Turb. testâ orbiculari, latè et profundè umbilicatâ, anfractibus nunc sulcatis, nunc lævibus; cæruleo-viridi, strigis albis undulatis longitudinaliter notatâ, intus margaritaceâ.*

THE WAVED TURBO. Shell orbicular, broadly and deeply umbilicated, whorls sometimes grooved, sometimes smooth; blueish-green, longitudinally marked with white zigzag streaks.

CHEMNITZ, Conch. Cab. vol. x. pl. 169. f. 1640–1.

Hab. New Zealand; Earl.

A species of common occurrence, characterized by an unusually large umbilicus.

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Sowerby del. et lith.

Reeve & C°

TURBO.

PLATE II.

Species 4. (Mus. Belcher.)

TURBO CORNUTUS. *Turb. testâ ovatâ, imperforatâ, tenuiculâ, anfractibus spiraliter costatis, sulcis intermediis obliquè subtilissimè laminatis, anfractu ultimo squamis tubulosis grandibus erectis biordinatim armato; rufescente-olivaceâ, intus argenteâ.*

THE HORNED TURBO. Shell ovate, imperforated, rather thin, whorls spirally ribbed, intermediate grooves obliquely very finely laminated, last whorl armed with two rows of large erect tubular scales; rufous olive, interior silver.

GMELIN, Syst. Nat. p. 3593.

Hab. Eastern Seas; Belcher.

A well-known shell of rather light growth, distinguished by a conspicuous double row of large erect spouted scales round the last whorl.

Species 5. (Mus. Cuming.)

TURBO LAJONKAIRII. *Turb. testâ ovatâ, umbilicatâ, anfractibus obscurè undulatim irregulariter costatis et liratis, medio biangulatis, ad utrumque angulum squamatis, squamis sublaciniatis et frondosis, apicem versus gradatim evanidis; albidâ, ad angulos viridi-fasciatâ, intus margaritaceâ.*

LAJONKAIRE'S TURBO. Shell ovate, umbilicated, whorls obscurely undulately irregularly ribbed and ridged, two-angled in the middle, scaled at both angles, scales somewhat laciniated and frondose, gradually fading towards the apex; whitish, banded with green at the angles, pearly within.

Delphinula Lajonkairii, Deshayes, Mag. de Zool.

Hab. Keeling Island; Darwin.

A fine species partaking very much of the character of *Delphinula*; it is of pale colour, distinguished in a marked degree by the vivid green bands on the angles of the whorls.

Species 6. (Mus. Cuming.)

TURBO IMPERIALIS. *Turb. testâ ovatâ, anfractibus rotundatis, lævibus, ultimo subamplo, ventricoso supernè obscurè angulato et interdum nodoso; viridi aut rufescente-viridi, zonis angustis nigricante alboque articulatis spiraliter pictâ, intus margaritaceâ.*

THE IMPERIAL TURBO. Shell ovate, whorls rounded, smooth, last whorl rather large, ventricose, obscurely angled and sometimes nodose round the upper part; green or rufous green, spirally painted with narrow zones articulated with black and white, interior pearly.

GMELIN, Syst. Nat. p. 3594.

Hab. Eastern Seas.

The next allied species in form to the large *T. marmoratus* and exhibiting a nearly similar style of painting.

Species 7. (Mus. Cuming.)

TURBO ARGYROSTOMA. *Turb. testâ ovato-turbinatâ, anfractibus subtubulosis, undique spiraliter costatis, costis alternatim majoribus, conspicuè squamatis, squamis apicem versus evanidis, aperturâ rotundâ; lutescente-albâ, fusco pallidè hic illic tinctâ, costis superioribus pallidè viridibus, intus argenteâ.*

THE SILVER-MOUTH TURBO. Shell ovately turbinated, whorls somewhat tubulous, spirally ribbed throughout, ribs alternately larger, conspicuously scaled, scales becoming obsolete towards the apex, aperture round; yellowish white, palely tinged here and there with brown, upper ribs pale green, interior silvered.

LINNÆUS, Syst. Nat. (12th edit.) p. 1236.

Hab. Island of Annaa, Pacific Ocean; Cuming.

Mainly distinguished by the erect structure of the scales, which profusely cover the ribs and in some instances are inclined backwards.

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8. a.

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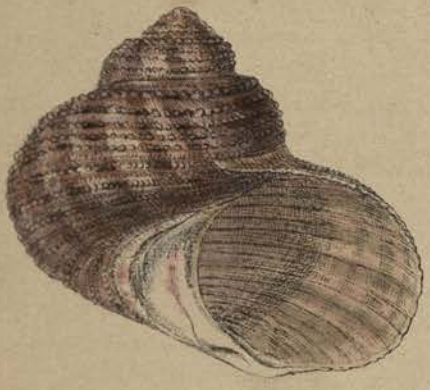
8. b.

10



11. a.

11. b.

12.

LIBRARY OF THE BOMBAY BRANCH OF THE ASIATIC SOCIETY

Sowerby del et lith.

Reeve & Co. in

TURBO.

PLATE III.

Species 8. (Mus. Cuming.)

TURBO VARIABILIS. *Turb. testâ ovatâ, imperforatâ, lævi, subporcellaneâ; rufescente-luteo et brunneo variabilè nebulosâ et articulatâ, intus argenteâ.*

THE VARIABLE TURBO. Shell ovate, imperforated, smooth, somewhat porcellanous; variously clouded and articulated with reddish yellow and brown, interior silvered.

Variety β. (Fig. 8 *b*.)

Testa rosaceo-rubra, lineis tenuibus albis, obliquè undulatâ. Shell pinkish-red, obliquely waved with fine white lines.

REEVE, Pro. Zool. Soc., 1842. p. 186.

Hab. Island of Capul, Philippines.

Extremely variable in its style of painting, but always distinguishable from *T. petholatus*, to which it is so nearly allied by the absence of the spiral articulated bands and yellow painting of the lip.

Species 9. (Mus. Cuming.)

TURBO PULCHER. *Turb. testâ ovatâ, anfractu ultimo subamplo, ventricoso; anfractibus spiraliter costatis, costis subdistantibus, liris tribus parvis ad interstitiis, costis lirisque subtilissimè crispato-laminatis; luteo-spadiceâ, apicem versus viridescente, lineolis brevibus nigricantibus undatis ubique pictâ, intus margaritaceâ*

THE BEAUTIFUL TURBO. Shell ovate, last whorl rather large, ventricose; whorls spirally ribbed, ribs rather distant, with three small ridges in the interstices, ribs and ridges very finely crisply laminated; yellowish-fawn, greenish towards the apex, everywhere painted with short blackish waved lines, pearly within.

REEVE, Pro. Zool. Soc., 1842. p. 185.

Hab. Turtle Island, North coast of Australia (on the reefs at low water); Dring.

Remarkable for the exquisite crisply laminated character of its sculpture.

Species 10. (Mus. Cuming.)

TURBO CRASSUS. *Turb. testâ ovatâ, anfractibus supernè concavo-angulatis, ad angulum obtusè carinatis, spiraliter sulcatis, sulcis confertiusculis; lutescente-albâ, fusco-nigricante nebulosâ et strigatâ, apicem versus viridescente, intus argenteâ.*

THE THICK TURBO. Shell ovate, whorls concavely angulated round the upper part, obtusely keeled at the angle, spirally grooved, grooves rather close-set; yellowish-white, clouded and streaked with brownish black, greenish towards the apex, interior silvered.

GRAY, Wood, Index Test. Supp. pl. 6. f. 43.

Hab. Port Essington; Jukes.

Chiefly characterized by the hollow depression of the whorls round the upper part.

Species 11. (Mus. Cuming.)

TURBO RUBICUNDUS. *Turb. testâ orbiculari, imperforatâ, subdepressâ, apice obtusâ, anfractibus rotundatis, liris granulatis undiquè spiraliter ornatis, granulis apicem versus gradatim majoribus, columellâ medio depressâ; rubescente hic illic albipunctatâ, intus margaritaceâ, pulcherrimè irridescente; operculo testaceo.*

THE RUDDY TURBO. Shell orbicular, imperforated, somewhat depressed, obtuse at the apex, whorls rounded, spirally adorned throughout with granulated ridges, granules gradually larger towards the apex, columella depressed in the middle; reddish, speckled here and there with white, interior pearly, beautifully irridescent; operculum testaceous.

REEVE, Conch. Syst. v. ii pl. 220. f. 11, 12.

Hab. New Zealand; Earl.

Of a ruddy chocolate-red colour, speckled here and there with white, spirally sculptured with delicately beaded ridges, of which the granules become gradually smaller and less defined as the shell advances in growth.

Species 12. (Mus. Cuming.)

TURBO PETHOLATUS. *Turb. testâ ovatâ, imperforatâ, lævigatâ, politâ, anfractibus supernè depressiusculis; rufescente-spadiceâ, fusco-rubente nebulatâ, fasciis viridibus aut luteis, nigro vel fusco maculatis, spiraliter pictâ, columellâ luteâ, intus argenteâ; operculo testaceo, crasso.*

THE RIBAND-BOUND TURBO. Shell ovate, imperforated, smooth, polished, whorls rather depressed round the upper part; reddish fawn colour, clouded with brown red and spirally painted with green and yellow bands, blotched with black or dark brown, columella yellow, interior silvered; operculum testaceous, thick.

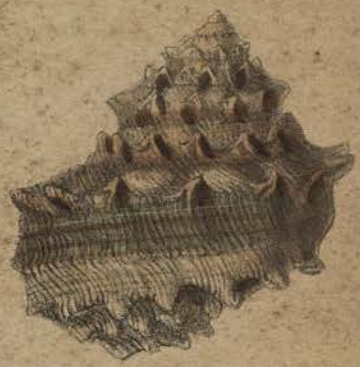
LINNÆUS, Syst. Nat. (12th edit.) p. 1233.

Hab. Island of Burias (on the reefs); Cuming.

This well-known species may always be recognized by its spiral bands of articulated colouring and the yellow painting of the columella.

13.

14. a.



14. b.

15.

16. a.

16. b.

17.

Sowerby, del. et lith.

Reeve & Co imp.

TURBO.

PLATE. IV.

Species 13. (Mus. Cuming.)

TURBO SMARAGDUS. *Turb. testâ imperforatâ, suborbiculari, anfractibus rotundatis, lævibus, concentricè striatis; cæruleo-viridi, intus argenteâ; operculo testaceo, crasso.*

THE EMERALD TURBO. Shell imperforated, nearly orbicular, whorls rounded, smooth, concentrically striated; blueish-green, interior silvered; operculum testaceous, thick.

GMELIN, Syst. Nat. p. 3595.

Turbo helicinus, Born.

Hab. New Zealand.

This shell has very much the form of a *Helix*, as indicated by the name above quoted from Born. It may be as well to mention that the specimen here figured is of rather small size.

Species 14. (Fig. *a* and *b*, Mus. Cuming.)

TURBO SAXOSUS. *Turb. testâ imperforatâ, ovatâ, spiræ suturis subprofundè impressis; anfractibus supernè concavo-declivibus, medio angulatis, transversim obscurè liratis, tuberculis juxta suturas coronatis, infra nunc muticis, nunc tuberculis bi-triseriatim armatis, laminis subtilibus, longitudinaliter obliquis, peculiariter exsculptis; viridi albimaculatâ, intus argenteâ; operculo testaceo, crasso.*

THE STONY TURBO. Shell imperforated, ovate, sutures of the spire rather deeply impressed; whorls concavely slanting round the upper part, angulated in the middle, transversely obscurely ridged, coronated with tubercles next the sutures, beneath either free or armed with two or three tubercles, peculiarly engraved with fine longitudinally oblique laminæ; green, blotched with white, interior silvered; operculum testaceous, thick.

Hab. West Columbia; Cuming.

Having observed this species in a private collection, under the name *saxosus* in manuscript, I adopt it, though not a very appropriate one, lest it may have been published and escaped my observation. The rows of tubercles are extremely variable, being even more prominently developed in specimens of smaller growth than is here represented.

Species 15. (Mus. Cuming.)

TURBO SARMATICUS. *Turb. testâ imperforatâ, suborbiculari, ventricosâ, spirâ brevissimâ, anfractibus lævibus, supernè depressiusculis, infra triseriatim nodatis; aurantio-flavicante nigro et fusco-rubro radiatâ et fasciatâ, intus margaritaceâ, prope marginem intensè nigrâ; operculo testaceo, cristato.*

THE RED-BROWN TURBO. Shell imperforated, nearly orbicular, ventricose, spire very short, whorls smooth, rather depressed round the upper part, encircled with three rows of nodules beneath; orange-yellow, radiated and banded with black and red-brown, pearly within, intensely black near the edge; operculum testaceous, tufted.

LINNÆUS, Syst. Nat. (12th edit.) p. 1235.

Hab. Cape of Good Hope.

The operculum of this well-known species is composed of a dense tuft of erect club-shaped particles.

Species 16. (Mus. Cuming.)

TURBO MAGNIFICUS. *Turb. testâ imperforatâ ovatâ, ventricosâ, spirâ brevi; anfractibus lævibus, obscurè subtilissimè liratis, supernè infra suturas leviter canaliculatis; albidâ aut viridescente, fusco nigroque profusè variegatâ et maculatâ, intus margaritaceâ; operculo testaceo, crasso.*

THE MAGNIFICENT TURBO. Shell imperforated, ovate, ventricose, spire short; whorls smooth, obscurely very finely ridged, slightly channelled round the upper part beneath the sutures; whitish or pale green, profusely blotched and variegated with black and brown, interior pearly; operculum thick, solid.

JONAS, Philippi, Abbild. und Besch. Conch. *Turbo.*

Hab. Bay of Sechura, Peru (dredged from a depth of fourteen fathoms); Cuming.

A new species, described by Dr. Jonas of Hamburgh, of which this is the only specimen I have seen; it is certainly a very characteristic one, and claims especial attention.

Species 17. (Mus. Cuming.)

TURBO LAMINIFERUS. *Turb. testâ umbilicatâ, ovatâ, spiræ*

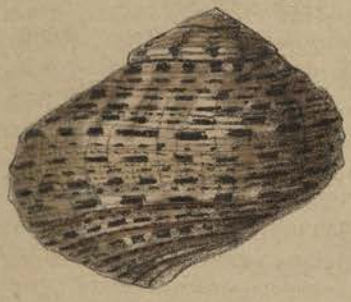
suturis canaliculatis; anfractibus subtubulosis, spiraliter costatis, costis distantibus, et, cum interstitiis, pulcherrimè concentricè laminatis, aperturâ rotundâ; viridi, nigro longitudinaliter undatâ, intus argenteâ.

THE LAMINIFEROUS TURBO. Shell umbilicated, ovate, sutures of the spire channelled; whorls somewhat tubulous, spirally ribbed, ribs distant and, with the interstices, very beautifully concentrically laminated, aperture round; green, longitudinally waved with black, interior silver.

Hab. Mouth of Victoria River, New Holland.

A very beautifully sculptured species, allied to the *T. Ticaonicus*, but perfectly distinguished from it in being of uniformly smaller size, more distinctly and remotely ribbed, and in being concentrically frilled throughout with a close succession of delicate laminæ.

18.



19. *a*.

19. *b*.

20.

21.

22.

23.

Sowerby, del et lith.

Reeve & Cº imp

TURBO.

PLATE V.

Species 18. (Mus. Cuming.)

TURBO TESSELLATUS. *Turb. testâ ovatâ, imperforatâ, anfractibus rotundatis, juxta suturas depressis, deinde obtusè carinatis, carinis superioribus obscurè nodosis; columellâ subexcavatâ; virescente-albâ, anfractuum parte superiore strigis longitudinalibus viridibus, inferiore zonis angustis spiralibus viridi-articulatis nitidè pictâ, intus margaritaceâ.*

THE TESSELLATED TURBO. Shell ovate, imperforated, whorls rounded, depressed next the sutures, then obtusely keeled, upper keels obscurely nodose; columella slightly excavated; greenish white, upper part of the whorls neatly painted with green longitudinal stripes, lower with narrow spiral green-articulated zones, interior pearly.

KIENER, Icon. coq. viv. pl. 9. f. 2.

Hab. California.

The difference in the style of painting of the upper and lower portions of the whorls presents a singular contrast. It proves not to be the *Cochlea Moltkiana* of Chemnitz, which I have identified with another species.

Species 19. (Mus. Cuming.)

TURBO VERSICOLOR. *Turb. testâ orbiculari, subglobosâ, conspicuè umbilicatâ, spirâ brevissimâ depressâ, anfractibus liris parvis retusis undique spiraliter exsculptis; albidâ, liris maculis punctisque viridibus nitidè articulatis, intus argenteâ, operculo testaceo, solido.*

THE VARY-COLOURED TURBO. Shell orbicular, subglobose, conspicuously umbilicated, spire short, depressed, whorls spirally sculptured throughout with small blunt ridges; whitish, neatly articulated with green dots and blotches, interior silvered; operculum testaceous, solid.

Hab. Baclayon, Island of Bohol, Philippines; Cuming.

Allied to the *T. porphyrites* in form, but easily distinguished by its ridged sculpture and articulated painting. I separate these species, although the names have been treated as synonymes.

Species 20. (Mus. Cuming.)

TURBO SPENGLERIANUS. *Turb. testâ ovatâ, imperforatâ, spirâ exsertiusculâ, anfractibus rotundatis, lævibus, regulariter spiraliter sulcatis, juxta suturas peculiariter excavato-depressis; rosaceo-spadiceâ, maculis punctisque fuscescentibus nebulosâ, intus argenteâ.*

SPENGLER'S TURBO. Shell ovate, imperforated, spire rather exserted, whorls rounded, smooth, regularly spirally grooved, peculiarly excavately depressed next the sutures; pinkish fawn-colour, clouded with light brown dots and blotches, interior silvered.

GMELIN, Syst. Nat. p. 3595.

Cochlea Spengleriana, Chemnitz.

Hab. Gulf of Mexico.

Easily distinguished by its pinkish fawn colour, and peculiar excavated channel round the top of the whorls.

Species 21. (Mus. Cuming.)

TURBO SQUAMIGER. *Turb. testâ globoso-ovatâ, imperforatâ, spiræ suturis subexcavatis, anfractibus subtumidis, squamis ubique spiraliter armatis, superioribus et inferioribus multo majoribus; viridescente, rufo-fusco punctatâ et variegatâ, intus argenteâ; operculo testaceo, crasso.*

THE SCALY TURBO. Shell globosely ovate, imperforated, sutures of the spire slightly excavated, whorls rather swollen, spirally armed throughout with scales, upper and lower scales much the larger; pale green, dotted and variegated with red-brown, interior silver; operculum testaceous, thick.

REEVE, Pro. Zool. Soc., 1842. p, 186.

Hab. Gallapagos Islands (dredged from a depth of seven fathoms); Cuming.

A very prettily marbled species, distinguished by its scaly sculpture.

Species 22. (Mus. Cuming.)

TURBO CORONATUS. *Turb. testâ globosâ, spirâ depressâ, anfractibus obsoletè squamatis, squamarum crassarum grandium seriebus tribus spiraliter armatis, columellâ excavatâ; albidâ, viridi tinctâ, intus margaritaceâ.*

THE CORONATED TURBO. Shell globose, spire depressed, whorls obsoletely squamate, spirally armed with three rows of large thickened scales or tubercles; columella excavated; whitish, stained with green, pearly within.

GMELIN, Syst. Nat. p. 3594.

Hab. —— ?

The scales of this species are all of a thickened stunted growth, assuming the character of tubercles.

Species 23. (Mus. Cuming.)

TURBO TICAONICUS. *Turb. testâ ovatâ, vix umbilicatâ, anfractibus subventricosis, multicostatis, costis irregularibus hic illic crispato-laminatis; viridescente, strigis latis nigris undatis conspicuè pictâ, intus argenteâ.*

THE TICAO TURBO. Shell ovate, scarcely umbilicated, whorls somewhat ventricose, many-ribbed, ribs irregular, here and there crisply laminated; greenish, conspicuously painted with broad waved black stripes, interior silvered.

REEVE, Pro. Zool. Soc., 1842. p. 185.

Hab. Island of Ticao, Philippines (on the reefs); Cuming.

The surface of this species is crisply laminated; but, unlike the *T. pulcher*, it is extremely irregular and uneven.

24.

25. a.

26.

25. b.

Sowerby, del. et lith.

Reeve, Benham & Reeve, imp.

TURBO.

PLATE VI.

Species 24. (Mus. Cuming.)

TURBO PICA. *Turb. testâ orbiculari-conoideâ, crassâ, ponderosâ, latissimè et profundè umbilicatâ, anfractibus lævibus, supernè vix depressis; intensè nigrâ, maculis albis undatis strigatâ, basi albâ, intus margaritaceâ; operculo corneo, tenui, spiraliter lineari-sulcato.*

THE MAGPIE TURBO. Shell orbicularly conoid, thick, ponderous, very broadly and deeply umbilicated, whorls smooth, slightly depressed round the upper part; intensely black, streaked with white waved blotches, white at the base, pearly within; operculum horny, thin, spirally linear-grooved.

LINNÆUS, Syst. Nat. (12th edit.) p. 1235.

Hab. Trinidad (on mud banks in rocky places); J. Cuming.

This well-known species is chiefly remarkable from the circumstance of its having a thin horny operculum, on which account it is referred by some authors to the genus *Trochus*. In form it may be said to be intermediate between the two genera, having more particular affinity with the *Turbo Norrisii*, which has been described as a new genus under the name *Trochiscus*.

Species 25. (Mus. Cuming.)

TURBO RUGOSUS. *Turb. testâ orbiculari-conoideâ, imperforatâ, anfractibus spiraliter scabroso-striatis, supernè plicis prominentibus coronatis, deinde carinatis, carinâ noduliferâ, aut planè squamatâ, squamis mucronatis; sordidè cœruleo-viridescente, intus argenteâ, labro columellari conspicuè aurantio-rubente; operculo crasso.*

THE ROUGH TURBO. Shell orbicularly conoid, imperforated, whorls spirally scabrously striated, coronated with prominent folds, then keeled, the keel being noduliferous or flatly scaled, scales sharp-pointed; dull bluish green, interior silvered, columellar lip conspicuously orange-red; operculum thick.

LINNÆUS, Syst. Nat. (12th edit.) p. 1234.

Hab. Mediterranean; Philippi.

This species may easily be recognized by the deep orange-red colouring of its widely expanded columellar lip; the same colour is also imparted to the operculum.

Species 26. (Mus. Cuming.)

TURBO TORQUATUS. *Turb. testâ orbiculari, depressiusculâ, latè et profundè umbilicatâ, anfractibus spiraliter liratis, longitudinaliter creberrimè lamellatâ, supernè apicem versus peculiariter plano-excavatis, deinde nodulatis, fossâ ætate labrum versus evanidâ; olivaceâ et viridescente; operculo testaceo, circulariter sulcato.*

THE COLLARED TURBO. Shell orbicular, rather depressed, widely and deeply umbilicated, whorls spirally ridged, longitudinally very closely lamellated, peculiarly flatly excavated round the upper part towards the apex; then noduled, the excavated trench disappearing towards the lip with age; olive and greenish; operculum testaceous circularly grooved.

GMELIN, Syst. Nat. p. 3597.

Var. sulcata. *Turbo lamellosus*, Broderip.

Hab. Isle of Buâche, West Coast of New Holland; Scott. New Zealand; Earl.

A careful observation of this species has convinced me that the circular trench which is so strongly developed in some varieties, and by which Mr. Broderip characterized his *T. lamellosus* (Zool. Journ. vol. v. p. 331. supp. plate xliv. f. 2.), varies with circumstances. In the most purely convex state of *T. torquatus* there is some faint indication of this grooved structure about the apex, and it is a universal law in the growth of spiral shells, especially in individuals of the genus under consideration, that sculpture, however precise and forcibly developed in the first few whorls, becomes gradually fainter and more diffuse towards maturity.

27.

28.

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Sowerby. del et lith.

Reeve, Benham & Reeve, imp.

TURBO.

PLATE VII.

Species 27. (Mus. Saul.)

TURBO CANALICULATUS. *Turb. testâ ovatâ, imperforatâ, spirâ subelatâ, anfractibus spiraliter sulcatis, supernè declivibus, liris spiralibus depressiusculis, unâ centrali, in anfractu ultimo duabus, vel partem inferiorem versus tribus, prominentibus, omnibus obliquè striatis; aperturæ fauce sulcato, viridi vividè variegatâ et nebulatâ, nigricante alboque hic illic marmoratâ, intus argenteâ.*

THE CHANNELLED TURBO. Shell ovate, imperforated, spire somewhat raised, whorls spirally grooved, slanting round the upper part, spiral grooves rather depressed, one central, in the last whorl two, and towards the lower part three, more prominent than the rest, all obliquely striated, interior of the aperture grooved; brightly variegated and clouded with green, marbled here and there with black and white, interior silvered.

GMELIN, Syst. Nat. p. 3594.

Hab. ——?

An excellent species which requires careful observation on account of its rarity and peculiar resemblance to the equally rare *Turbo crassus*. Like that species the last whorl presents two ridges more prominently developed than the rest and distinguished by a very similar style of marking; they will, however, be found to differ in their convexity and general character throughout. In the *T. canaliculatus* the ridges are more elevated and obliquely striated across, the colouring is of another character, and the interior of *T. crassus* is not grooved, as in this species.

For the specimen here figured I am indebted to the collection of Miss Saul.

Species 28. (Mus. Cuming.)

TURBO CHRYSOSTOMA. *Turb. testâ ovatâ, imperforatâ, anfractibus supernè angulatis, undique spiraliter subtiliter costatis, costis interdum minutissimè et creberrimè squamatis, squamis ad angulum et infra prominentioribus interdum peramplis; lutescente, castaneo plus minusve tinctâ et marmoratâ, intus aureo-margaritaceâ.*

THE GOLDEN-MOUTH TURBO. Shell ovate, imperforated, whorls angulated round the upper part, spirally ribbed throughout, ribs sometimes very minutely and closely scaled, scales at the angle and beneath more prominent, sometimes very large; yellowish, more or less stained or marbled with chesnut brown, interior golden pearl.

LINNÆUS, Syst. Nat. (12th edit.) p. 1237.

Hab. Santa Cruz, Island of Luzon, Philippines; Cuming.

There appear to be two very distinct varieties of this well-known and abundant species, one of larger size in which the spiral ribs are more prominent and all distinctly minutely scaled, whilst the larger scales upon the angle are in some measure obsolete. In the smaller variety this condition of the sculpture is reversed, the ribs being very small and only marked by fine ripples of laminæ, whilst the scales on the angle are of a large tubercular structure.

Species 29. (Mus. Cuming.)

TURBO MARGARITACEUS. *Turb. testâ ovatâ, umbilicatâ, anfractibus supernè concavis, spiraliter costatis, costis rotundatis, distantibus, interstitiis profundè excavatis, lirâ parvâ crenatâ interveniente; lutescente, castaneo maculatâ et variegatâ, intus argenteâ.*

THE PEARLY TURBO. Shell ovate, umbilicated, whorls concave round the upper part, spirally ribbed, ribs rounded, distant, interstices deeply excavated, with a small beaded ridge intervening; yellowish, spotted and variegated with chesnut brown, interior silvered.

LINNÆUS, Syst. Nat. (12th edit.) p. 1236.

Hab. Eastern Seas.

The ribs of this species are rather distant with the interstices between them characterized by the presence of a minute beaded ridge which becomes gradually obsolete towards the apex.

Species 30. (Mus. Cuming.)

TURBO SPARVERIUS. *Turb. testâ ovatâ, imperforatâ, subventricosâ; anfractibus supernè vix declivibus spiraliter lineari-sulcatis, costis intermediis plano-convexis, mediano cæteris prominentiore; fuscescente-albâ, nigricante-fusco peculiariter tessellatâ et maculatâ, intus argenteâ.*

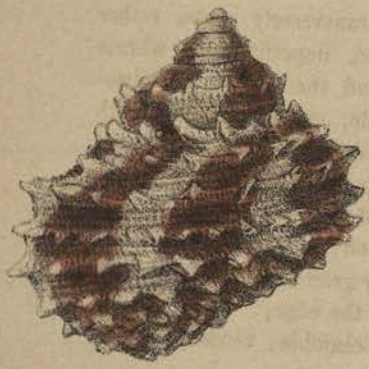
THE SPARROW-HAWK TURBO. Shell ovate, imperforated, slightly ventricose, whorls little slanting round the upper part, spirally linear-grooved, intermediate ribs flatly convex, the middle one more prominent than the rest; brownish white, peculiarly tessellated and spotted with blackish brown, interior silvered.

GMELIN, Syst. Nat. p. 3594.

Hab. Isle of Luzon, Philippines; Cuming.

This species which is one of very rare occurrence is somewhat intermediate in character between the *T. setosus* and *crassus*, though sufficiently distinguished from the former by the depression and closer proximity of the ribs. The most characteristic feature of the species is, perhaps, to be found in its very peculiar dull brown tone and style of colouring.

31.



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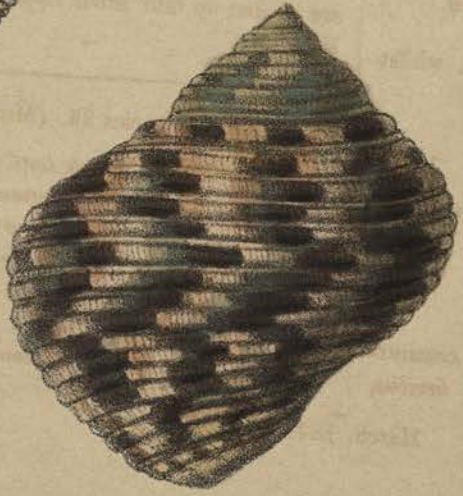

37.

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ASIATIC SOCIETY

Sowerby. del et lith.

Reeve, Benham & Reeve, imp.

TURBO.

PLATE VIII.

Species 31, (Mus. Cuming.)

TURBO RADIATUS. *Turb. testâ ovato-turbinatâ, umbilicatâ, subtubulosâ, anfractibus rotundatis, spiraliter liratis, liris obtusis, nunc angustis, minutis, nunc grandibus, latiusculis, interstitiis obliquè striatis; luteâ aut virescente, castaneo-fusco supernè conspicuè radiatâ, basin versus spiraliter articulatâ.*

THE RAYED TURBO. Shell ovately turbinated, umbilicated, somewhat tubulous, whorls rounded, spirally ridged, ridges obtuse, here narrow and minute, there large and rather broad, the interstices being obliquely striated; yellowish or greenish, conspicuously rayed at the upper part with chesnut brown, and spirally articulated at the lower.

GMELIN, Syst. Nat. p. 3594.

Hab. —— ?

This species may be recognized by its tubular growth and dark colouring, the brown being disposed in marked broad rays from the sutures; the figure in Chemnitz, quoted by Lamarck for the illustration of this species, is quite a distinct thing, for which see Sp. 36.

Species 32. (Mus. Cuming.)

TURBO HISTRIO. *Turb. testâ subglobosâ, tumidâ, imperforatâ, spiræ suturis excavato-canaliculatis, spiraliter liratis, liris subtilissimè laminiferis, squamatis, squamis fortibus, erectis; niveâ, aurantio-ferrugineo latiradiatâ, intus argenteâ.*

THE HARLEQUIN TURBO. Shell somewhat globose, swollen, imperforated, sutures of the spire excavately channelled, spirally ridged, ridges very finely laminiferous, squamate, scales strong, erect; snowy white, broadly rayed with orange-rust colour, interior silvered.

Hab. —— ?

A shell of ventricose growth, strongly scaled, whilst the entire surface is very minutely laminated.

Species 33. (Mus. Cuming.)

TURBO JAPONICUS. For description see next Plate, Fig. 33 *b*.

Species 34. (Mus. nobis.)

TURBO FLUCTUATUS. *Turb. testâ transversè ovatâ, crassiusculâ, subventricosâ, imperforatâ; anfractibus lævibus, supernè rudè angulatis, ad angulum obsoletè nodosis, infra liris plano-obtusis, hic illic ferè evanidis, cingulatis; columellâ concavâ; olivaceâ, lineis niveis viridi-umbratis, acutè undatis, conspicuè longitudinaliter pictâ, intus argenteâ; operculo testaceo, spiraliter sulcato, medio subtilissimè granuloso, marginem versus multiserrato.*

THE WAVED TURBO. Shell transversely ovate, rather thick, somewhat ventricose, imperforated; whorls smooth, rudely angled round the upper part, obsoletely nodose at the angle, encircled below with flatly obtuse ridges, here and there faintly developed; columella concave; olive, painted longitudinally with conspicuous, zig-zag, white lines, shadowed with dark green, interior silvered; operculum testaceous, spirally grooved, very finely granulated in the middle, minutely serrated towards the edge.

Hab. Punta, St. Elena, West Columbia; Cuming.

An extremely interesting species, which, though of rare occurrence, has long been known to me by the above name; from whom it received that appellation, which is a very characteristic one, I cannot, however, learn. It is a shell of solid growth, somewhat rudely noduled, and obscurely flatly ridged. The ground colour is that of a livid olive, very conspicuously marked with numerous zig-zag lightning-like streaks of bright body-white, shaded with dark green.

The operculum is remarkable; testaceous and strongly spirally grooved, the innermost groove is broadly excavated, and the central mass is solid and minutely granulated, whilst the portion without the broad groove is arranged in numerous concentric, finely serrated laminæ.

For a variety of this species, in which the zig-zag streaks are broken up into small ripple-like waves, see Plate XI. Fig. 3 *c*.

Species 35. (Mus. Cuming.)

TURBO SPECIOSUS. *Turb. testâ ovatâ, vix umbilicatâ, spirâ subelatâ, anfractibus rotundatis, liris pulcherrimè creberrimè squamatis undique cingulatis; lutescente, liris hic illic viridè viridibus, intus argenteâ.*

THE BEAUTIFUL TURBO. Shell ovate, scarcely umbilicated, spire somewhat raised; whorls rounded, encircled throughout with very beautifully closely scaled ridges;

yellowish, ridges here and there bright green, interior silver.

Hab. New Holland; Dring.

This beautiful new species is remarkable for the delicacy and singularity of its painting, the spiral rows of scales showing each a fine narrow bright green band upon a pale orange-yellow ground, faintly stained with brown.

Species 36. (Mus. Cuming.)

TURBO CHEMNITZIANUS. *Turb. testâ ovatâ, imperforatâ, anfractibus subangulatis, liris parvis, squamarum seriebus cingulatis, interstitiis minutissimè lamineferis; albidâ, strigis parvis fuscescentibus obliquè undatâ, intus argenteâ.*

CHEMNITZ'S TURBO. Shell ovate, imperforated, whorls slightly angular, encircled with small ridges and rows of scales, interstices very minutely laminiferous; whitish, obliquely waved with small, light brown streaks, interior silvered.

Argyrostomus maris rubri, Chemnitz, Conch. Cab. vol. v. p. 199. pl. 180. f. 1788–9.

Hab. Red Sea; Forshael, fide Cuming.

This species does not appear to have been identified by any author since its publication in the Conchylien Cabinet in the year 1781. Chemnitz's admirable figure of it was referred to by Lamarck for the *T. radiatus*, but it will be found to differ very materially from that species. It is a larger shell, not imperforated, and of lighter growth, whilst the last whorl is more ventricose and has a somewhat angular appearance from its being encircled with three ridges of scales. The colouring is peculiar; the ground is a soft greyish cream colour, the pattern consisting of delicate brown zigzag streaks darting from the sutures.

The locality which Mr. Cuming has on good authority with this interesting shell, agrees precisely with that recorded by Chemnitz.

Species 37. (Mus. Saul.)

TURBO SETOSUS. *Turb. testâ ovatâ, imperforatâ, anfractu ultimo ventricosissimo, anfractibus undique spiraliter costatis, costis rotundis, regularibus, interstitiis excavatis, aperturâ amplâ, basi effusâ, fauce sulcatâ; albidâ, viridi et fusco-viridi tessellatâ, intus argenteâ; operculo testaceo, crasso.*

THE ROUGH TURBO. Shell ovate, imperforated, last whorl very ventricose; whorls spirally ribbed throughout, ribs round, regular, interstices excavated, aperture large, effused at the base, interior grooved; whitish, tessellated with green and brown-green, interior silvered; operculum testaceous, thick.

GMELIN, Syst. Nat. p. 3594.

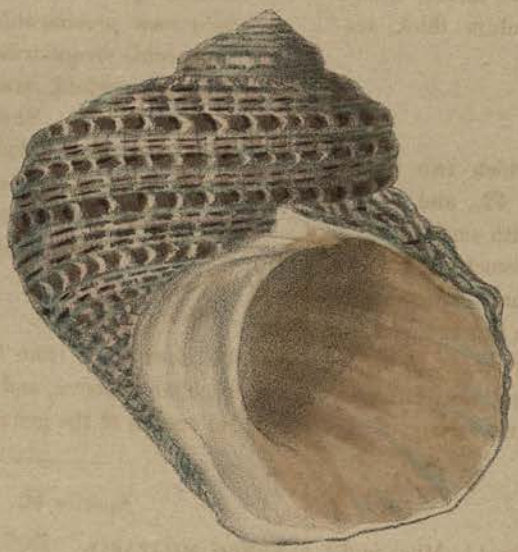
Hab. Lord Hood's Island, Pacific Ocean (on the reefs); Cuming.

This species is amply distinguished from any other of the genus by its deeply carved spiral ribs, whilst the aperture is large and peculiarly effused at the base.

38.

39. a.

39. b.



3. c

33. b.

41.

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Sowerby del. et lith.

Reeve, Benham, & Reeve, imp.

TURBO.

PLATE IX.

Species 38. (Mus. Cuming.)

TURBO CRENULATUS. *Turb. testâ ovatâ, imperforatâ, spiræ suturis excavatis, anfractibus nodulis papillosis obtectis, convexis, aut medio subangulatis et liratis, liris plerumque squamosis, squamis superioribus prominentibus; albâ aut virescente-albâ, aurantio-rufo, spadiceo viridive radiatâ, intus argenteâ; operculo testaceo, crasso.*

THE CRENULATED TURBO. Shell ovate, imperforated, sutures of the spire excavated, whorls covered with papillose nodules, convex or slightly angulated in the middle and ridged, ridges generally squamose, the upper scales being prominent and erect; white or pale greenish white, rayed with fawn colour, orange or green, interior silvered; operculum thick, testaceous.

GMELIN, Syst. Nat. p. 3575.

Hab. West Indies.

An extremely variable species of which two further varieties are represented at Pl. X. Fig. 42., and Pl. XI. Fig. 50. The entire shell is covered with small papillose nodules, the centre of the whorls being sometimes smooth, but mostly adorned with numerous sharp erect scales. In colour the *T. crenulatus* varies from a bright green to a light fawn and orange, and I have every reason to believe that the *T. castaneus*, Gmelin (*T. hippocastanum*, Lamarck) is a worn specimen of an orange-chesnut variety of this species.

Species 39. (Fig. 39. Mus. Taylor, and Fig. 41. Mus. Saul.)

TURBO ARTICULATUS *Turb. testâ ovatâ, vix umbilicatâ, spirâ acuminatâ; anfractibus subtubulosis, spiraliter obtusè costatis, costis irregularibus, longitudinaliter creberrimè serrato-striatis; viridi purpureo-nigricante marmoratâ et variegatâ, intus argenteâ.*

THE ARTICULATED TURBO. Shell ovate, slightly umbilicated, spire acuminated, whorls somewhat tubular, spirally obtusely ribbed, ribs irregular, longitudinally very closely serrately striated; green, marbled and variegated with purple-black, interior silvered.

Hab. —— ?

Allied to the *T. radiatus* in form, but peculiar in its articulated style of painting.

Fig. 3. *c.* (Mus. Taylor.)

TURBO FLUCTUATUS. An interesting variety of the species described under this name in the preceding plate in which the waves are broken up into small ripples.

Species 33. (Pl. VIII. Fig. 33. and Pl. IX. Fig. 33 *b*. Mus. Cuming.)

TURBO JAPONICUS. *Turb. testâ ovatâ, imperforatâ, tenuiculâ, subinflatâ, anfractibus lævibus, spiraliter costatis, costis nunc prominentibus, regularibus, nunc planiusculis, valdè irregularibus; spadiceo-luteâ, rufo variè tinctâ et maculatâ, intus argenteâ.*

THE JAPAN TURBO. Shell ovate, imperforated, rather thin, somewhat inflated, whorls smooth, spirally ribbed, ribs sometimes prominent and regular, sometimes rather flattened and very irregular; fawn yellow, variously stained and blotched with red, interior silvered.

Hab. Japan; Siebold.

Like most shells from the Japanese Islands, this is of very peculiar character, and quite different from any of the tropical species of the genus.

Species 40. (Mus. Cuming.)

TURBO MILITARIS. *Turb. testâ ovatâ, imperforatâ, tenuiculâ, subventricosâ, anfractibus lævibus, supernè declivibus; rufescente-albidâ, maculis lineisque rufis nitidè pictâ; columellæ margine livido-cinereo, intus argenteâ.*

THE MILITARY TURBO. Shell ovate, imperforated, rather thin, somewhat ventricose, whorls smooth, slanting round the upper part; reddish-white, neatly painted with red lines and blotches; edge of the columella livid ash-colour, interior silvered.

Hab. Isle of Annaa, (on the reefs); Cuming.

An interesting species of rather light growth exhibiting a very distinct and characteristic style of painting.

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46. a.

46. b.

47.

Sowerby del et lith.

Reeve Bentham & Reeve imp.

TURBO.

PLATE X.

Fig. 42. (Mus. Saul.)

TURBO CRENULATUS var. β. *Turb. testâ ovato-turbinatâ, imperforatâ, spiræ suturis canaliculatis, anfractibus supernè concavo-angulatis, spiraliter nodulosis, medio squamarum liris tribus aut pluribus cingulatâ, squamis ad angulum prominentioribus erectis; albido spadiceoque nitidè radiatâ et nebulatâ, intus argenteâ.*

THE CRENULATED TURBO. Shell ovately turbinated, imperforated, sutures of the spire channelled, whorls concavely angled round the upper part, spirally nodulous, encircled round the middle with three or more ridges of scales, the scales on the angle being more prominent and erect; neatly rayed and clouded with white and fawn colour.

Hab. —— ?

A most elegant and delicately sculptured variety, rayed and tessellated with a peculiar fawn colour, of the *T. crenulatus* described in the preceding plate, Sp. 38.

Species 43. (Fig. 43 and 44. Mus. Cuming.)

TURBO NIVOSUS. *Turb. testâ oblongo-turbinatâ, imperforatâ, spirâ subexsertâ, anfractibus spiraliter liratis, liris obtusis, irregularibus, duabus prominentibus subsquamosis; vividè virescente, fusco hic illic maculatâ, liris prominentibus et inferioribus fusco niveoque articulatis, intus argenteâ.*

THE SNOWY TURBO. Shell oblong-turbinated, imperforated, spire somewhat exserted, whorls spirally ridged, ridges obtuse, irregular, two prominent and slightly scaly; bright green, spotted here and there with brown, the prominent and lower ridges articulated with brown and snowy white, interior silvered.

Hab. Philippine Islands; Cuming.

A prettily painted species, not apparently described before.

Species 45. (Mus. Cuming.)

TURBO TUMIDULUS. *Turb. testâ ovatâ, imperforatâ, spirâ subacuminatâ, anfractu ultimo amplo, tumidiusculo; anfractibus undique spiraliter liratis, liris angustis, confertis, valdè irregularibus, obliquè serratis; lutescente, intensè castaneo nebulatâ.*

THE SWOLLEN TURBO. Shell ovate, imperforated, spire somewhat acuminated, last whorl large and swollen: whorls spirally ridged throughout, ridges narrow, close set, very irregular, obliquely serrated; yellowish, clouded with deep chesnut.

Hab. —— ?

This species merges into the *T. spinosus*, but is very remotely connected with it.

Species 46. (Mus. Taylor.)

TURBO CIRCULARIS. *Turb. testâ suborbiculari, imperforatâ, spirâ breviusculâ, anfractibus supernè depressis, liris obtusè nodiferis, alternatim majoribus, cingulatis; rosaceo-fusco alboque marmoratâ, columellâ planoconcavâ, albâ, intus margaritaceâ.*

THE CIRCULAR TURBO. Shell somewhat orbicular, imperforated, spire rather short, whorls depressed round the upper part, encircled with obtusely nodiferous ridges, alternately larger; pinkish brown, marbled with white, columella flatly concave, white, interior pearly.

Hab. —— ?

Very nearly allied in form and general aspect to the first species of this monograph, *T. Natalensis*, but readily distinguished on comparison.

Species 47. (Mus. Cuming.)

TURBO SPINOSUS. *Turb. pyramidali-turbinatâ, imperforatâ, spiræ suturis subrudis, anfractibus convexis, minutè obtusè liratis, liris subtilissimè obliquè striatis, hic illic conspicuè seriatim squamatis, squamis erectis, muricatis; luteo et virescente, castaneo plus minusve tinctâ et punctatâ, intus argenteâ.*

THE SPINY TURBO. Shell pyramidally turbinated, imperforated, sutures of the spire somewhat rude, whorls convex, minutely obtusely ridged, ridges very finely obliquely striated, here and there conspicuously scaled, scales in rows, erect, prickly; yellowish and greenish, more or less faintly dotted and stained with chesnut, interior silvered.

The spiny Silvermouth, Chemnitz, Conch. Cab. vol. v. p. 204. pl. 181. f. 1797.

Turbo tuberculosa, Quoy, Kiener.

Hab. Nicobar Island.

An extremely variable species, which ought in courtesy to be designated by the name applied to it so many years since by Chemnitz; it would, however, be difficult to identify were it not that Mr. Cuming possesses a specimen agreeing precisely with the figure in the Conchylien Cabinet, and of which I have thought it necessary to give a representation at Pl. XIII.

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Sowerby del et lith.

Reeve, Bentham, & Reeve imp.

TURBO.

PLATE XI.

Species 48. (Mus. Cuming.)

TURBO NICOBARICUS. *Turb. testâ subglobosâ, solidiusculâ, imperforatâ, spirâ brevissimâ, obtusâ; anfractibus supernè subobscurè depresso-canaliculatis, undique lævibus; spadiceo-albicante, reticulâ minutâ maculisque grandibus sanguineis ornatâ, aperturâ intensè rufo-aurantiâ; operculo corneo.*

THE NICOBAR TURBO. Shell somewhat globose, rather solid, imperforated, spire rather short, obtuse; whorls somewhat obscurely depressly channelled round the upper part, smooth throughout; fawn-white, ornamented with large deep blood spots and a very minute net-work of the same colour, aperture intensely reddish orange; operculum horny.

GMELIN, Syst. Nat. p. 3596.

Helix paradoxa, Born.

Hab. Island of Ticao, Philippines; Cuming.

Peculiarly distinguished by its obtuse, solid growth and forcible display of colour, consisting of large, scattered, blood-red blotches, and deep golden-orange aperture.

Species 49. (Mus. Metcalfe.)

TURBO NIGER. *Turb. testâ subglobosâ, solidiusculâ, Littorinæformi, spiraliter creberrimè sulcatâ; purpureo-nigrâ, intus argenteâ.*

THE BLACK TURBO. Shell somewhat globose, rather solid, Littorina-shaped, spirally very closely grooved; purple black, interior silver.

GRAY, Beechey's Voyage, p. 143. pl. 36. f. 1.

Hab. Valparaiso (under stones at low water); Cuming.

A solid, purple-black species, approximating somewhat in form to *Littorina vulgaris*, the common Periwinkle of our shores. It has a bright silvered interior.

Fig. 50. (Mus. Cuming.)

TURBO CRENULATUS, var. γ. *Turb. testâ ovatâ, imperforatâ, spiræ suturis canaliculatis; anfractibus rotundatis, undique spiraliter eximiè nodoso-liratis, quarum tribus centralibus subprominentioribus; virescente-albâ, viridi nitidè radiatâ et marmoratâ, intus argenteâ.*

THE CRENULATED TURBO, var. γ. Shell ovate, imperforated, sutures of the spire channelled; whorls rounded, spirally delicately nodosely ridged throughout, the three central ribs being rather more prominent; greenish-white, neatly rayed and marbled with light green, interior silvered.

Hab. —— ?

This extremely delicate species described at Plate IX., merges into the *T. castaneus*, of Gmelin and Lamarck in a manner which does not admit of their being separated.

Species 51. (Mus. Taylor.)

TURBO CIDARIS. *Turb. testâ suborbiculari, vix imperforatâ, anfractibus rotundatis, lævibus; supernè rufo-fuscescente, maculis albidis peculiariter radiatis, infra zonulis angustis, rufo-articulatis cingulatâ, intus margaritaceâ; operculo testaceo, crasso.*

THE TURBAN TURBO. Shell somewhat orbicular, slightly imperforated, whorls rounded, smooth; reddish brown round the upper part, peculiarly rayed with whitish spots, encircled beneath with narrow, red-articulated, little zones, interior pearly; operculum testaceous, thick.

GMELIN, Syst. Nat. p. 3596.

Hab. —— ?

This pretty species exhibits a great peculiarity in its display of colouring, the upper portion of the whorls being always more or less distinctly rayed from the sutures with pale irregular blotches.

Species 52. (Mus. Cuming.)

TURBO PORCATUS. *Turb. testâ orbiculari, spirâ depressiusculâ, suturis excavatis, subtus concavâ, profundè umbilicatâ, anfractibus fortiter spiraliter costatis, costis rotundatis, lirâ minutâ interveniente; viridi, rufo-olivaceo nitidè marmoratâ, intus argenteâ.*

THE RIBBED TURBO. Shell orbicular, spire somewhat depressed, sutures excavated, concave beneath, deeply umbilicated; whorls rounded, with a minute ridge coming between; green, neatly marbled with reddish-olive, interior silvered.

Hab. Point Swan, North Australia; Dring.

Allied in form to the *T. versicolor* and *porphyrites*, from both of which species it is sufficiently distinguished by its strongly ribbed growth.

Species 53. (Mus. Saul.)

Turbo porphyrites. *Turb. testâ globosâ, subdepressâ, solidiusculâ lævigatâ, aut obsoletè minutè sulcatâ, profundè umbilicatâ; virescente, olivaceo nebulosâ et minutè articulatâ, fasciâ angustâ lutescente medio cingulatâ, apice roseo, aperturæ fauce argenteâ.*

The porphyry Turbo. Shell globose, somewhat depressed, rather solid, smooth, or obsoletely minutely grooved, deeply umbilicated; greenish, clouded and minutely articulated with olive-green, and encircled round the middle with a yellowish band, interior of the aperture silvered.

Gmelin, Syst. Nat. p. 3602.

Hab. ——?

Distinguished by its smooth, polished exterior, and minute articulated painting.

Species 54. (Mus. Taylor).

Turbo Norrisii. *Turb. testâ depresso-orbiculari, lævigatâ, Rotellæformi, subtus convexiusculâ profundè et ampliter umbilicatâ; rufescente-castaneâ, umbilicorum margine nigro, intus margaritaceâ; operculo corneo.*

Norris's Turbo. Shell depressly orbicular, smooth, Rotella-shaped, rather concave beneath, largely and deeply umbilicated; reddish chesnut, margin of the umbilicus jet black; operculum horny.

Trochiscus Norrisii, Sowerby, Mag. Nat. Hist. 2nd. Series. Zool. Beechey's Voyage, pl. 34. f. 14.

Turbo Rotellæformis, Jay.

Hab. ——?

This remarkable species, which has been not unaptly regarded by Mr. Sowerby as the type of a new genus, approaches the form of *T. versicolor*, whilst it has almost the depressed growth of a *Rotella*.

44.

55.

56.

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Sowerby. del. et lith.

Reeve, Benham & Reeve, imp.

TURBO.

PLATE XII.

Species 54. (Mus. Metcalfe.)

TURBO MURREUS. *Turb. testâ minutâ, suborbiculari, vix umbilicatâ, lævigatâ, politâ; albâ, roseo nitidè maculatâ.*

THE PORCELAIN TURBO. Shell minute, somewhat orbicular, slightly umbilicated, smooth, polished; white, neatly blotched with pale rose.

Hab. —— ?

A minute delicately coloured porcelain shell.

Species 55. (Mus. Metcalfe.)

TURBO SANGUINEUS. *Turb. testâ parvâ, subglobosâ, umbilicatâ, spiraliter sulcatâ; albâ, maculis sanguineis interruptis cingulatâ.*

THE BLOOD-STAINED TURBO. Shell small, somewhat globose, umbilicated, spirally grooved; white, encircled with blood-red interrupted spots.

LINNÆUS, Syst. Nat., 12th edit. p. 1235.

Globulus roseus, Chemnitz.

Turbo coccineus, Deshayes.

Hab. Mediterranean.

I am not quite sure that this is the *T. sanguineus* of Linnæus, but have every reason to believe it is.

Species 56. (Mus. Metcalfe.)

TURBO CORALLINUS. *Turb. testâ parvâ, suborbiculari-ovatâ, imperforatâ, conspicuè spiraliter sulcatâ; roseo-purpureâ, intus margaritaceâ.*

THE CORAL TURBO. Shell small, somewhat orbicularly ovate, imperforated, conspicuously spirally grooved; rose-purple, pearly within.

Hab. —— ?

Another interesting small species, of a dull livid rose-purple hue, strongly spirally grooved.

Species 57. (Mus. Cuming.)

TURBO MARGINATUS. *Turb. testâ ovatâ, solidiusculâ, imperforatâ, spiraliter striatâ, subsulcatâ, aperturâ parvâ; albidâ, livido-olivaceo tinctâ et maculatâ.*

THE MARGINED TURBO. Shell ovate, rather solid, imperforated, spirally striated, slightly grooved, aperture small; whitish, stained and blotched with livid-olive.

NUTTALL, MSS.

Hab. Upper California.

A solid shell with a peculiarly contracted aperture; externally it is white, with large livid olive blotches here and there, having the appearance of so many bruises.

Species 58. (Mus. Taylor.)

TURBO TROCHOIDES. *Turb. testâ subpyramidali-ovatâ, perforatâ; anfractibus spiraliter sulcatis, supernè concavis, deinde obsoletè nodosis; luteo-albicante, olivaceo radiatim maculatâ, lineolis minutissimis aurantio-fuscis obliquè reticulatis.*

THE TROCHOID TURBO. Shell somewhat pyramidally ovate, perforated; whorls spirally grooved, concave round the upper part, then obsoletely nodose; yellowish-white, radiately blotched with olive and obliquely reticulated with very minute orange-brown lines.

Hab. —— ?

A species of peculiar sculpture and marking, partaking very much of the generic character of *Trochus*.

Species 59. (Mus. Belcher.)

TURBO PUSTULATUS. *Turb. testâ ovatâ, subventricosâ, imperforatâ, nodis grandibus papillosis undique notatâ, aperturæ fauce argenteâ; albidâ, olivaceo-fusco luteoque maculatâ.*

THE BLISTERED TURBO. Shell ovate, somewhat ventricose, imperforated, marked throughout with large papillose nodules, interior of the aperture silvered; whitish, blotched with yellow and olive-brown.

Hab. —— ?

An interesting species covered with swollen nodules, collected by Sir Edward Belcher during the voyage of the Sulphur.

Species 60. (Mus. Cuming.)

TURBO TURSICUS. *Turb. testâ subpyramidali-ovatâ, imperforatâ, spiræ suturis excavatis, anfractibus spiraliter squamato-liratis, supernè declivibus, acutè angulatis,*

ad angulum erecto-squamatis, aperturâ parvâ; lutescente, coccineo-rufo pulcherrimè radiatâ.

THE MOSQUE TURBO. Shell somewhat pyramidally ovate, imperforated, sutures of the spire excavated, whorls spirally squamately ridged, slanting round the upper part, sharply angled, erectly squamate at the angle, aperture small; yellowish, beautifully rayed with scarlet red.

Hab. Philippine Islands; Cuming.

A prettily painted species, encircled by a diadem of erect scales.

Species 61. (Mus. Taylor.)

TURBO PYROPUS. *Turb. testâ subdepresso-ovatâ, imperforatâ, spiræ suturis simplicibus, anfractibus lævibus striisve spiraliter cingulatis; albidâ, striis vividè rubris, intus argenteâ.*

THE RUBY TURBO. Shell somewhat depressly ovate, imperforated, sutures of the spire simple, whorls smooth, spirally encircled with striæ; whitish, lines bright red, interior silvered.

Hab. —— ?

Of a deep blood-red colour, with the margins of the aperture united beyond the columella.

Species 62. (Mus. Taylor.)

TURBO GEMMATUS. *Turb. testâ subdepresso-ovatâ, spiræ suturis subprofundè canaliculatis, anfractibus nodulis parvis undique gemmatis; corallo-rufescente, intus argenteâ*

THE BEADED TURBO. Shell somewhat depressly ovate, imperforated, sutures of the spire somewhat deeply channelled, whorls beaded throughout with small nodules; light coral red, interior silvered.

Hab. —— ?

Very similar in form to the preceding species, and partaking, in some measure, of the colour; the spire differs in having the sutures deeply channelled and the entire surface in being beaded with small papillose nodules. In the former species the margins of the aperture are entire, and it is the striæ that are coloured upon a white ground.

Species 63. (Mus. Belcher.)

TURBO LUGUBRIS. *Turb. testâ suborbiculari-ovatâ, spirâ depressâ, anfractibus supernè declivibus, deinde nodulis papillosis cingulatis, columellâ concavâ; albidâ, epidermide crassâ nigricante indutâ, columellâ et aperturâ argenteis.*

THE MOURNFUL TURBO. Shell somewhat orbicularly ovate, spire depressed, whorls slanting round the upper part, then encircled with papillose nodules, columella concave; whitish, covered with a thick dark epidermis, columella and aperture silvered.

Hab. —— ?

Another species collected by Capt. Sir E. Belcher in the Sulphur, not hitherto described.

47. b.

74. c.

41.

14. c.

14. d.

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Sowerby, del et lith.

Reeve, Benham. & Reeve imp

TURBO.

PLATE XIII.

Species 47. (Fig. *b* and *c*. Mus. Cuming.)

TURBO SPINOSUS. I have already described this extremely variable species at Plate X., and there remarked the necessity of figuring the present specimen to assist in identifying it with *The Spiny Silvermouth* of Chemnitz, Conch. Cab. vol. v. p. 204. pl. 181. f. 1797. Externally it has a very similar aspect to certain varieties of the *T. chrysostoma*, it may, however, be readily distinguished from that species by its more tubular aperture, of which the interior is delicately silvered.

Species 41. (Mus. Brit.)

TURBO JOURDANI. *Turb. testâ subamplâ, ovatâ, conico-turbinatâ, imperforatâ, anfractibus primis spiraliter tricostatis, costis subangustis, prominentibus, distantibus, ultimo ventricoso, multicostato, costis latiusculis, obscuris; columellâ subcylindraceâ, supernè callosâ; aperturâ amplâ, circulari; castaneo-rubente, intus margaritaceâ.*

JOURDAN'S TURBO. Shell rather large, ovate, conically turbinated, imperforated, the first whorls three-ribbed, ribs rather narrow, prominent, distant, last whorl ventricose, many-ribbed, ribs rather wide, and obscure; columella rather cylindrical, callous at the upper part; aperture large, circular; chesnut-red, interior pearly.

KIENER, Revue Zool. Soc. Cuv., 1839, p. 324. Mag. de Zool., 1840, Moll. pl. 9.

Hab. New Holland.

Of this fine species there are two examples in the British Museum, remarkably distinguished from any other of the genus. The specimen represented is the smaller of the two. The first few whorls are characterized by three prominent spiral ribs, but they gradually become extinct as the shell approaches maturity, leaving the last whorl encircled throughout with a succession of obscure broad ribs, scarcely elevated above the surface.

Species 14. (Fig. *c* and *d*. Mus. Saul.)

TURBO SAXOSUS. The specimen here represented is a more frequent state of the species than either of those figured in Plate IV., and deserves illustration on account of the peculiar aspect of its colouring and additional tubercles. It is uniformly smaller in size, and of a white silvery ground, with the green sparingly distributed in rather distant waved stripes.

April, 1848.

TURBO.

	Plate.	Species.
argyrostoma, *Linnæus*	II.	7
articulatus, *Reeve*	IX.	39
canaliculatus, *Gmelin*	VII.	27
Chemnitzianus, *Reeve*	VIII.	36
chrysostoma, *Linnæus*	VII.	28
cidaris, *Gmelin*	XI.	51
circularis, *Reeve*	X.	46
coccineus, Deshayes	XII.	55
corallinus, *Reeve*	XII.	56
cornutus, *Gmelin*	II.	4
coronatus, *Gmelin*	V.	22
crassus, *Gray*	III.	10
crenulatus, *Gmelin*	IX.	38
crenulatus, *var.* β,	X.	42
crenulatus, *var.* γ,	XI.	50
fluctuatus, *Reeve*	VIII.	34
gemmatus, *Reeve*	XII.	62
helicinus, Born	IV.	13
histrio, *Reeve*	VIII.	32
imperialis, *Gmelin*	II.	6
Japonicus, *Reeve*	VIII. & IX.	33
Jourdani, *Kiener*	XIII.	41
Lajonkairii, (*Delphinula*), Desh.	II.	5
lamellosus, Broderip	VI.	26
laminiferus, *Reeve*	IV.	17
lugubris, *Reeve*	XII.	63
magnificus, *Jonas*	IV.	16
margaritaceus, *Linnæus*	VII.	29
marginatus, *Nuttall*	XII.	57
marmoratus, *Linnæus*	I.	2
militaris, *Reeve*	IX.	40
murreus, *Reeve*	XII.	44
Natalensis, *Reeve*	I.	1
Nicobaricus, *Gmelin*	XI.	48
niger, *Gray*	XI.	49
nivosus, *Reeve*	X.	43
Norrisii, *Reeve*	XI.	54
olearius, Linnæus	I.	2
petholatus, *Linnæus*	III.	12
pica, *Linnæus*	VI.	24
porcatus, *Reeve*	XI.	52
porphyrites, *Gmelin*	XI.	53
pulcher, *Reeve*	III.	9
pustulatus, *Reeve*	XII.	59
pyropus, *Reeve*	XII.	61
radiatus, *Gmelin*	VIII.	31
Rotellæformis, Jay	XI.	54
rubicundus, *Reeve*	III.	11
rugosus, *Linnæus*	VI.	25
sanguineus, *Linnæus*	XII.	55
sarmaticus, *Linnæus*	IV.	15
saxosus, *Reeve*	IV. & XIII.	14
setosus, *Gmelin*	VIII.	37
smaragdus, *Gmelin*	IV.	13
sparverius, *Gmelin*	VII.	30
speciosus, *Reeve*	VIII.	35
Spenglerianus, *Gmelin*	V.	20
spinosus, *Reeve*	X. & XIII.	47
squamiger, *Reeve*	V.	21
tessellatus, *Kiener*	V.	18
Ticaonicus, *Reeve*	V.	23
torquatus, *Gmelin*	VI.	26
Trochoides, *Reeve*	XII.	58
tuberculatus, Quoy, Kiener	X.	47*
Tursicus, *Reeve*	XII.	60
undulatus, *Chemnitz*	I.	3
variabilis, *Reeve*	III.	8
versicolor, *Reeve*	V.	19

ERRATA.

Sp. 26. *T. torquatus.* Add as synonyme *T. heteroclitus*, Kiener.
Sp. 45. *T. tumidulus.* Cancel this species and read *T. spinosus* var.
Sp. 47. For synonyme *T. tuberculosa*, read *T. tuberculatus.*

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